ADDRESSES AND ORIGINAL ARTICLES

PSYCHOTHERAPY IN GENERAL PRACTICE*

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It is still asserted occasionally, and the curriculum in many medical schools still seems to support the assertion, that psychiatry is mainly a post-graduate subject; by which it is implied that psychiatry is a highly specialised branch of medicine, too abtruse for medical students, and rather useless in practice anyway.

The reason for this view lies probably in the fact that the statutory teaching in psychological medicine is confined to the demonstration of patients resident in mental hospitals. What a small proportion of the whole field of psychiatry is occupied by the in-patient population of mental hospitals is well shown by the statistics of a special out-patient department in a general hospital, such as the department for nervous diseases and psychological medicine at Guy's. Of approximately 600 consecutive cases, 436, or nearly three-quarters, were diagnosed as psychoneuroses, and 129, or under one-quarter, were diagnosed as psychoses, including for convenience and contrast in that category not only manic-depressive, involutional melancholic, schizophrenic and paranoid conditions, and organic reaction types, but epileptics and mental defectives as well. In other words, at an out-patient clinic designed to cater for all kinds of mental and nervous illness, the psychoneuroses were at least three times as frequent as all the other mental conditions lumped together. Further significance lies in this, that hardly any psychoneuroses are admitted to mental hospitals; hey remain as one of the sets of problems of which general practice is composed.

It would be a mistake to regard the above figures as more than a pointer towards the relative numerical mportance of psychoneuroses and psychoses. It is extremely probable that the incidence of psychoneurotic conditions among the general population s considerably greater than the figures for a special linic indicate. After all, the general practitioner ees in each year of his work only a few patients who are obviously psychotic—i.e., suffering from a mental illness of a type and severity necessitating admission o a mental hospital—and to say that he encounters sychoneurotic conditions thrice as often is not to ssert much in absolute numbers. But it is only he more obvious cases of psychoneuroses that are referred to a special department. The rest remain s out-patients in other departments of the hospital, eing regarded as part of the inevitable load of cases f the more chronic kind. One's gynæcological olleagues declare that many of their patients are uffering not from any important physical lesion, but om psychoneurotic conditions whose symptomatic xpression seems to be mainly in the gynæcological eld. The same applies to dermatology, to cardiology, nd, in fact, to medicine in general. The point is ot simply that psychoneurotic conditions occur hich masquerade as gynæcological, dermatological, rdiac, or other states of bodily ill-health, but that a numerically important proportion do so. Such statistics as can be obtained are indirect in their bearing but their meaning is unmistakable. A well-known consultant in general medicine, who sees as wide a range of conditions as most people, and who certainly does not have any prejudices in favour of psychological medicine, tells me that among the six most frequent diagnoses which he is called upon to make, "anxiety-neurosis," as he calls it, is one. I have asked many doctors in general practice what proportion of psychoneuroses they roughly estimate they encounter in their everyday work, and they have given me estimates which, for fear of seeming to overstate the case, I shall not quote.

There is another source of information, however. Everyone knows that the rise in the cost of sickness benefit, under the National Health Insurance Act, has been causing concern. Inquiries in certain industries have shown that as much as 60 per cent. of the time lost through sickness is lost through psychoneurotic illness of some kind or other (Lockhart).

It is still, I think, necessary to labour the considerable prevalence of psychoneurotic illness because older views die hard; and many, perhaps the majority, of psychoneuroses still go unrecognised under diagnosis of anæmia, gastric catarrh, debility, neurasthenia, and the like. But enough has been said to show how important it is for any doctor to be able to recognise and, if possible, to treat conditions of such frequency and of such polymorphous symptomatic appearance.

The Psychotherapist's Equipment

As for treatment, there is an impression, and it is partly true, that psychotherapy is a specialist's job. So it is, in its more technical forms. But a considerable proportion of psychoneuroses do not require a highly specialised technique. This is as well, since technical psychotherapy is essentially a prolonged affair in many instances. What is commonly described as the old type of family doctor had an insight into, and a consequent ability to treat, psychoneurotic conditions because he had a profound knowledge of human nature. But such almost unconscious psychotherapy has its limitations, and there is no reason why the general practitioner of to-day, in spite of the preoccupation of his medical education with X rays, blood tests, and other laboratory methods, should not be more successful than his predecessor of 50 years ago in treating the symptomatic results of life's difficulties, dissatisfactions, and disharmonies, in the health of his patients.

The first requirement of a psychotherapist is a good knowledge of general medicine, otherwise he is likely to involve his patients in danger and himself in ridicule. Nowhere in medicine is a knowledge of the natural history of disease of more use than in the diagnosis of psychoneurotic illness as a first step towards treatment. In psychological medicine, almost more than in any other branch, an accurate history is indispensable not only for diagnosis but, as I hope to show, for treatment. In mental illness of any kind it is still clinical observation that matters most. For the great majority of mental illnesses and especially for the psychoneuroses, serological, radiological, and other laboratory experiments are of only negative value, as excluding the possibility of organic disease. Much of the rest of the psychotherapist's equipment is already contained in the phrase "a knowledge of general medicine," because that knowledge should include something about the psychology of human nature. But this is a field in which too much knowledge is, in a sense, a dangerous thing. The tendency for the man who specialises in psychotherapy is to make his own path more and more difficult. He sees ever-widening theoretical ramifications in every case he meets, and anything short in time and thoroughness of what he considers the ideal is stultified by his own lack of confidence in it. The tendency is for some of us to become increasingly ineffective in the use of shorter methods, and to look back regretfully to the days of our psychotherapeutic adolescence, when we would produce not cures, perhaps, but dramatic improvements in a minimum of time. The preface to T. A. Ross's book on "The Common Neuroses" gives a good account of a progress of the kind. There is another danger, too, that a wide theoretical knowledge applied without a critical and careful discrimination, based on extensive experience, can do a psychoneurotic patient harm which it is very hard to repair.

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What knowledge, then, of psychology should the general practitioner have? He should have a sympathetic acquaintance with what is called human nature, which means its envyings, jealousies, rivalries, as well as its affections. He should have also an appreciation of the power of conflicts arising in relation to such tendencies to produce bodily disturbances. In other words, he should have an appreciation, based on experience, of how psychological factors can cause what looks like "disease." I propose to specify the kind of knowledge I mean, first by giving some indication of the kinds of symptoms that are in practice most commonly produced by psychological factors, and then by describing some actual examples of typical psychological conflicts and their resolution by simple methods of psychotherapy.

Classification

Psychopathologists are often accused of being too academic. I will therefore try to make this address as practical as may be, and for that purpose will make the most ordinary subdivision possible of the disorders that constitute our subject matter.

The subdivision is into the definitely curable and the merely manageable. By "curable" I mean capable of active treatment, immediately following upon which the symptoms disappear; by "manageable" I mean lending itself only to symptomatic treatment and recovering, if it does recover, only with the passage of time, however much one may flatter oneself about one's own share in the matter. Of course, such a division is completely unscientific. In therapeutics one man's meat is another man's poison; what some of us would rejoice to treat, others should avoid like the plague; this is true of psychotherapy if not of other branches of medical treatment. But in psychotherapeutics it is certain patients, not certain diseases, that are specially apt for treatment by some doctors and not by others. It is a matter of personalities and of particular types of personal as well as clinical experience.

If I am to give a list of the functional nervous conditions falling into the curable group, it is with the understanding that they are to be regarded as types specially susceptible to cure, and that individual instances may not prove curable at anyone's hands. The curable disorders include many cases included in the following purely symptomatic categories.

1. *Nervous exhaustion*, in which, in addition to feeling exhausted, the patient often complains of brain fag, poor memory, excessive fatigue, irritability, or insomnia.

2. The *anxiety group*, in which the complaints are of headache (of the type of "pains in the head" or "a constricting band"), giddiness, palpitation, præcordial pains, insomnia, indigestion (pains in the stomach not specially related to meals), tremulousness, polyuria, &c.

3. Instances of the so-called *vasovagal attacks* which are often a variety of the previous group. (Some vasovagal attacks, of course, are not of psychological origin.)

4. *Hysteria* of the "conversion" type: weakness, paralysis, or tremor of limbs, fancy gaits, aphonia, anæsthesia of special senses, loss of memory, and fugues.

5. A very common type: *depression of spirits.* These are frequently varieties of group 2.

6. Certain *morbid fears*, especially of illness and usually a part of group 2. Other morbid fears (phobias) such as fears of open or closed spaces, fear of animals, of going out alone, cannot so readily be placed in this class. Many of them are curable—all of them theoretically so—but many of them only by technical and prolonged methods of psychotherapy. This is especially true of those morbid fears which form part of the symptom-picture of obsessive compulsive psychoneuroses. Only a minor proportion of the latter are susceptible of cure, even by prolonged analytic psychotherapy.

Compensation neuroses, although usually having the form of an anxiety state or of hysteria, belong, as a rule, to the manageable and not to the curable class. I shall not refer further to the other merely manageable types in general; for the most part they are what one usually designates as psychoses, although I do not want it to be inferred that no psychosis is susceptible of psychotherapy.

Physical Examination

There are some general principles which apply to all the types. An essential preliminary is a careful physical examination. This is not entirely for one's own satisfaction; it helps to establish the patient's confidence. Frequently these nervous patients have been dismissed with a rather cursory examination in the past, they are obviously healthy physically; they have often cried "Wolf," and now it is assumed to be the same again. Even if they have frequently been examined by others to one's own knowledge, I believe that it is very desirable when consulted by such a patient to make a physical examination. A very large number of them fear that they have some physical disease. Modern psychotherapy is largely a talking cure, but few such patients believe much that is said to them by a doctor who has never examined them. If a physical lesion is discovered it is necessary to consider its relevance to the complaints.

The fallacy of irrelevant pathology.—Even definite septic foci, pace the bacteriologists, have not necessarily a causal relation to the symptoms. I have met a patient who had tonsillectomy, mastoidectomy, appendicectomy, cholecystectomy, and myomectomy, and still retained her symptoms which were typically neurotic. I have met another who, in the early days of this operation, had a gastro-enterotomy for a "dropped stomach," the symptoms referred to which depended largely on her father's bad temper. "Better a dinner of herbs where love is, than a stalled ox and hatred therewith." Another unmarried woman had all her teeth out because, if her doctor had only known it, she was unhappy at home; while the loss of her teeth made it all the more likely that she would have to remain there.

The fallacy of phantastic pathology.—Neurotic symptoms have, until recent times, been so mysterious that when no organic lesion has been discovered, the natural tendency has been to suppose that there must be a lesion somewhere if one were only clever enough, or one's instruments refined enough, to discover it. There was, for example, the eyestrain hypothesis. It is interesting to note that at a meeting of ophthalmologists, reported in the *British*

Medical Journal about two years ago, it had been discovered that errors of + or − 1 D. do not cause nervous exhaustion, and that the correct treatment was not glasses but common-sense guidance of the patient's life, which "did not require the coöperation of a psychopathologist," whereby they spurned those who had taught them wisdom. But the commonest diagnoses of this kind are still anæmia, gastric catarrh, influenza, and auto-intoxication—anæmia for any vague symptoms whatever; gastric catarrh for symptoms referred to the digestive functions; and influenza for symptoms of more acute onset, especially malaise, weakness, and trembling. When influenza is mentioned in the history I have learned to examine the details carefully; often there has been no pyrexia, and the only diagnosis has been the patient's own. The same applies to any other diagnosis, and indeed to any other statement proffered by the patient. One of the things I have learned is never to take, without further inquiry, anything a psychoneurotic patient says about important events in his history at its face value.

Fallacies of omission.—Errors in diagnosis of the kind described arise from the simple facts that the examination has been incomplete, and that the copious influence of mental factors in producing symptoms has not been considered. As students we received from our medical curriculum a strong bias in favour of a physical ætiology for everything. Things are changing now, but until very recent years it was uncommon for students to be taught that præcordial pain, breathlessness, and the like, could result from mental conflict, or that hysteria was anything but the weird perversity of the congenitally queer. The result is that our investigations have usually been incomplete, no matter how thorough the physical examination may have been, because the psychological aspect has been persistently overlooked. In 99 cases out of 100 in which no adequate physical lesion has been found it is correct to assume a psychological cause. It impressed me considerably after acquiring the physical bias imparted by my clinical teachers, who were unceasingly modernising themselves, as they quite rightly thought, by basing their teaching more and more upon physiology, to find on working in a physiological laboratory as a post-graduate that the physiologists themselves were acutely conscious of what they called the psychological factor. These attitudes of the clinicians to the physiologists and of the physiologists to psychology remind me of Bertrand Russell's remark about the physicists and the biologists. The biologists, he says, turn for the consolation of ultimate explanations to the physicists, while the physicists of late years turn only to God.

Psychological Examination

A clinical examination can include the psychological aspect of a man without much extra trouble. There are two kinds of psychological examination which might well be called the cross-sectional and the longitudinal. The first is directed simply to eliciting the presence of symptoms which are psychological and is principally of diagnostic value. The simple query "Are you worried?" may often give a chance for most useful information to appear. There is a short form of inquiry which we use on those lines as a routine at out-patients at Guy's, and which usually prevents one missing, even in the hurried work of an out-patient department, the essential manifestation of nervous or mental illness. Neglect of even this shortened survey can lead to serious errors. I have seen a hospital report on a case of general paralysis of the insane in which the mental aspect was dismissed with the comment "mentality normal." Fortunately, in general paralysis some very definite physical signs ordinarily come to the rescue. But in the psychoneuroses they are not there to do so.

One of the commonest experiences is to find a patient who has had several abdominal operations for certain symptoms referred to the alimentary tract, although there has been no definite signs, and who is no better, but rather worse after the operation than before. In many instances the operation would have been avoided if such a brief cross-sectional mental examination had been made as I have indicated. Not long ago I saw a man who had undergone an exploratory laparotomy for certain symptoms in his abdomen. It had not been observed that he was depressed and anxious, and that eighteen months previously he had been in a mental hospital where he had complained of the same symptoms which had disappeared with a temporary remission in his mental state. A still more striking instance of this sort came to my notice some years ago of a patient who had had an exploratory craniotomy.

His complaint was that he had frequent headaches, and that his left hand went into spasms at irregular intervals. A careful neurological examination revealed what was believed to be a spasm of the right sternomastoid and a slight left facial weakness. On the basis of these admittedly slight signs a meningioma was diagnosed, and on the strength of this neurological opinion the surgeon, very reluctantly and doubtfully, operated. He did not find the meningioma that had been diagnosed, which did not surprise him. The skull-flap was closed, and because some thickening of the arachnoid had been noted the house surgeon wrote up on the patient's bed-letter the diagnosis, "chronic meningitis." Subsequently it was discovered that the patient was going round public libraries consulting encyclopædia articles on meningitis. This prompted new inquiries, and it was found that the patient had been depressed and worried before the operation, that for years he had been discontented with his job, and that at home he was cantankerous. In brief, the clinical signs of a mental condition were so much more positive than those of any physical disease, that the greater probability lay in a diagnosis of an anxiety state than of a meningitis. The subsequent history, extending over three years, has proved the accuracy of this opinion.

The cross-sectional clinical examination of the psychological factors is, however, of mainly diagnostic value; for treatment the longitudinal method, in other words, the taking of a history of the patient as well as the history of his symptoms is essential. The cases which I shall quote will illustrate in some degree the use of the longitudinal method.

I should add also that care in eliciting symptoms of a psychological type, and in taking an accurate history, is not a sufficient prelude to successful treatment. It is also necessary to have sound views on psychopathology, and to have at least an appreciation that the symptoms can be produced by purely psychological causes. This avoids such catastrophes as one I saw recently. A woman in the late 'thirties had complained of various paræsthesia, trembling, and other symptoms which together were correctly enough labelled "neurasthenia." But the treatment prescribed for the neurasthenia was hysterectomy, and a perfectly sound uterus was removed, with the usual result in such circumstances that the patient remained as ill as before and certainly with less prospect of recovery. Such a history-taking should ordinarily precede a physical examination, but in practice it would save time in some instances if it followed the physical survey. If we assume that nothing physically abnormal has been found, or if found does not seem to be relevant, the next stage in treatment is to obtain the type of history I have mentioned, and to see if one can correlate the development of the symptoms with the patient's own account of himself and of his circumstances.

Nervous Exhaustion

Patients of the first group, those complaining of exhaustion, furnish some of the simplest examples of this method. It happens that I have encountered a patient whose story singularly well exhibits the characteristics of exhaustion or "neurasthenia" not dependent on physical disease, and who also illustrated, in the history of his treatment, most of the theories that have been held on the ætiology of typical neurasthenia or "nervous exhaustion" in the past 30 years.

He was an army officer who, while serving in the East during the last year of the last century, suddenly complained of malaise, was diagnosed as suffering from malaria, and took to his bed.

During convalescence, from what appears to have been a mild attack, he found that his legs were very weak. The weakness persisted to such an extent that even after some months he was unable to return to duty. "Nervous exhaustion" was diagnosed, and he was ordered a complete rest on Weir-Mitchell lines, after which it was found that though he had more use of his legs he was readily fatigued. On some occasions he bicycled 20 miles, but always suffered terribly afterwards and had to remain in bed, exhausted, for several days. He consulted an eminent authority of the time, who said that he had "spinal neurasthenia," and added that neurasthenics differed entirely from hysterics in that they always tried to conceal a real disability while hysterics made the most of an imaginary one. Following this the patient spent some years in and out of nursing homes for periods of rest, which would serve for a time, but always the fatigue returned.

The next outstanding episode in treatment followed a new diagnosis of endocrine, and especially adrenal, insufficiency. He now received injections of adrenaline, especially before making any unusual effort which he felt inclined to make in a social way. After a time these injections lost their stimulating effect, and various other endocrine preparations were tried in turn, without however even temporary effects this time. It was then suggested that the postulated endocrine deficiency was secondary to an intoxication of intestinal origin. The stools were cultured accordingly, an organism isolated, a vaccine made and injected, and the bowel irrigated. Again there was a temporary effect. In 1925 focal infection was suggested, and his teeth were removed practically wholesale with no lasting result.

In 1927, when he came under my observation, the weakness and fatigue were worse than ever, and he could hardly walk across his bedroom. It was now nearly 30 years since he began to suffer from his neurasthenia. He had done no work in his profession during that time, having, in fact, resigned long ago, but he had taken up a part-time job which he conducted from bed. Organically he was sound, and in fact very well preserved for a man of 60. Investigation of his mental attitude revealed a very unhappy man who had loathed his profession from the beginning; even his Sandhurst days had been a misery to him.

The treatment here consisted in :—

1. A careful physical examination.

2. A systematic and chronologically detailed history of the symptoms in relation to the patient's personal history, career, and so on.

3. An explanation to the patient that (*a*) he had no physical disease, but (*b*) that his symptoms, however, were not nothing; that they were real and must have some definite cause.

4. An explanation of the effects of the emotions on the viscera, especially in producing fatigue. Everyone knows that worry, to take the commonest example of an emotional state, is extremely fatiguing, and I know no two symptoms that go oftener together than fatigue and depression of spirits.

5. The effect of false inference—i.e., that the fatigue was due to bodily disease and not therefore avoidable by him—in perpetuating his symptoms and in making him expect to feel tired, was pointed out.

6. He was then encouraged to increase his activity not gingerly by inches, but by leaps and bounds. As there was nothing physically wrong with him, and only his own misconception and discouragement based on this prevented him from being perfectly normal, he could walk as far as he pleased. And this he did, after 30 years of semi-invalidism. For the next five years he remained active, and then for a time relapsed, but not with his former symptoms. This time he was mainly depressed about his life and circumstances, as indeed he had reason to be.

This sounds a long process but it can really be quite short. I have known it to be compressed into a single interview of little more than an hour, even in a condition of as long duration as the one I have mentioned.

A particular instance in a man of science showed well how a particular emotional experience, if its effects are misunderstood at the time, can produce a chronic psychoneurotic symptom very resistive to ordinary treatment.

This was a man of middle-age who complained of "brain-fag," which took the form of inability to read for more than about 40 minutes at a time. He then had to rest for half an hour befor he could resume. This had handicapped him considerably in his work for examinations which had been essential to his scientific career. We investigated the history of the symptom in a straightforward, chronological way. It had first appeared 30 years or more ago, when the patient was about 13. At that time he was taking some of his work in classes from the headmaster of his school, whom he disliked very much. The headmaster remarked to his mother that the boy had an under-developed brain, and the mother had injudiciously communicated this to the boy. The latter, although doing well in his other subjects, believed this, and noted anxiously that he gained weight in the summer and lost it in the winter. He concluded that this was the result of overstrain of his "under-developed brain," and so he became afraid to read for more than a certain period of time. In his fear he automatically assumed that he would become fatigued after this period, and it had become a habitual fear producing the effect long after the reason for it had been forgotten.

When he remembered all this, as he succeeded in doing after an hour and a quarter's effort by the patient and myself, he naturally asked what was to be done now? What he had ventilated had surprised him a good deal—so much so that I felt it was a "true bill," and advised him to proceed forthwith to the nearest technical library and read there for at least two hours. This was on Friday. I asked him to return to me on the Monday. He appeared looking rather sheepish, and admitted that he had now no difficulty in working for as long as he pleased. The therapeutic process here was simple enough. It insisted on an accurate chronological history of the development of the symptoms; a physical examination, an assurance based on the latter that a physical cause was out of the question, and then an inquiry into the history of his life as distinct from the history of his symptoms, but focusing especially round the time of their remembered origin. The entire process took an hour and a quarter, and cleared up a symptom which had troubled him for 30 years. This would have been impossible if the patient had not been highly intelligent and keen to get well.

The key to the successful treatment of a case of nervous exhaustion is not to tell the patient that he has nothing the matter with him, which is palpably false; but to explain how emotional factors can cause fatigue, and then to demonstrate their existence in his own case. In exhaustion of this kind rest has no place in therapy; it is, in fact, contra-indicated as definitely harmful. But there are certain cases of exhaustion without existing physical lesion and with symptoms similar to those of the sort described, such as insomnia, irritability of temper, hypersensitiveness to noise, and the like. This is the "hyperæsthetic-emotional state of weakness" of German authors, and is distinguished from the former principally by the history, which contains real and definite overwork, or such causes of severe physical debility as parturition or acute infection. That the overwork has been real it is important to establish, for many a neurasthenic pleads overwork as an honourable occasion for his breakdown; but real overwork means something of the nature of sewing shirts until 10 P.M.

every day and on Saturdays and Sundays as well, as in the case of an out-patient seen at Guy's recently. In the instance of another woman, also an out-patient, it meant nursing four children through an infectious illness, bearing a fifth in the space of the same few months, doing all the housework, and sleeping little.

The symptoms in both these cases were difficult to distinguish from neurasthenia of emotional origin. They did, in fact, result partly from an anxiety based on the fear of incapacity for work and responsibilities. Nevertheless, even in patients with a history of recent physical stress, it is wise if they present symptoms with an ambiguous look to inquire into the more personal aspect of their lives. I recently felt fairly sure with a woman patient that she was suffering from a "hyperæsthetic-emotional" type of disturbance resulting from real overwork in her home and with her ailing children, until I discovered that she was all the time miserably unhappy with a drunken husband.

There is another possibility of error here. A history of an acute illness is by no means decisively in favour of an ætiology of a fatigue syndrome that is principally physical. Sometimes the post-febrile weakness and debility perpetuate themselves as suggestions of weakness. The convalescent patient does not always realise that he has fully recovered.

For example, I remember a pioneer airman who, crashing badly, retired permanently from flying but recovered his health completely. The retirement, however, left him with nothing particular to do. Several years later, in 1923, he had an influenzal pneumonia from which he ultimately recovered, only to find even after a year's convalescence that he could only take a very limited amount of exercise This limitation persisted for about four years until I examined him in 1928. I found a very healthy and well-developed man, and told him so. He replied that it was very odd that he could walk no further than 300 yards without extreme fatigue. I removed him temporarily from his wife, who was a little older and mothered him too much. I encouraged him to believe that he was physically quite well, and that he could do anything he wanted to if he would only believe it. It took three weeks to convince him of this, but at the end of that time he was living a natural life, playing all the games, such as golf and tennis, that he formerly enjoyed, and taking part in amateur theatricals.

Here again the treatment and its success depends on an accurate analysis of the history, not only of the disease, but also of the personal circumstances; and especially, in this particular case, of the temperament, which was an over-anxious one. I believe that an accurate history, coupled with an ordinary but complete clinical examination, is of far more value in the diagnosis of disease in general, and consequently in treatment, than test-meals, X rays, measurements of blood pressure, or bacteriological examinations taken singly or together, and there are many clinicians in other branches of medicine who agree with me. Alvarez's recent book on nervous indigestion comes to the same conclusion, and Alvarez is a physiologist and a clinician. It is not that laboratory methods do not have their value, even in the treatment of psychoneurotics. There is nothing more convincing, in a superficial way, to some of them, than a negative radiogram. Not the most vehement assurances of the most impressive doctor carry more weight than that. But X ray photographs are expensive methods of reassurance, and they serve at best only to lessen preoccupation with a particular symptom.

Anxiety Neuroses

The second and by far the largest group of so-called functional nervous conditions is the one usually designated, not very accurately, as an anxiety neurosis or, more accurately, a psychoneurotic anxiety-state, and by Freud as anxiety-hysteria. It must be one of the commonest conditions seen by any doctor, and it has a multitude of symptoms. Usually, many of these symptoms are gathered together in one patient. They may implicate any or all of the bodily systems, but usually the patient tenders only one or two. The rest can usually be elicited by questioning him, and the fact that symptoms are found to exist with regard to practically every system in the body, is almost diagnostic of the condition, although not a necessary mark of it. The complaints are uniform enough from patient to patient to enable some of them to be regarded as typical; and they have sufficient resemblance to the effects of bodily disease to give rise to a frequent possibility of error. In the cardiovascular system they usually include palpitation and præcordial pain; in the respiratory system shortness of breath usually, less often cough, or difficulty in getting a breath, sometimes mistakenly described as "asthma"; in the nervous system, headaches in the form of pain in the head or a band round the head, tremblings, insomnia, fatigue, nightmares, and paræsthesia such as numbness or pins and needles; in the digestive system fullness in the stomach, flatulence, vague pains in the abdomen, vomiting. and diarrhœa; in the genito-urinary system, frequency of micturition or inability to micturate under certain circumstances, dyspareunia, spermatorrhœa, and premature ejaculation.

The differential diagnosis from organic disease is sometimes difficult. In the absence of any very definite physical signs one should always think of the statistical probability of a psychological origin for such symptoms as those above mentioned. The history is the main thing, both from the diagnosis and as a basis for treatment. A knowledge of the natural history of clear-cut organic disease is invaluable, and usually the history of the symptoms in the anxiety states is very different from that of the organic diseases they suggest. If the symptoms are cardiac. then the dyspnœa arises as much apart from exertion as with it, even at rest or in the middle of the night, and præcordial pain is common and persistent. If the symptoms have an alimentary reference actual pain does not occur, or if it does, has no relation to food and is indefinitely localised as a rule and changes its position frequently.

For example, a man of 47 complained of pain when he awoke in the morning, and discomfort when he went down to breakfast which was completely relieved while at breakfast, but was replaced by pain again after half an hour's rest after breakfast. This was followed by relief till lunch, after which "the real thing" began and lasted till bedtime. This is not like the history of pain belonging to any of the organic diseases of the stomach.

The mental attitude is one of anxiety but the patient may not mention this. He fears that there is something the matter and usually something serious. The fear most commonly present, and one that he mentions last if he does put it into words at all, is the fear of insanity.

Everyone knows that an examination and reassurance that there is nothing wrong is sometimes all the treatment that these patients require; but frequently after this process they relapse or go elsewhere. Sometimes they go away. discontented from the beginning with the assertion that it is nothing. Obviously there must be something, they think, or they would not have symptoms like these. They are quite right. They have something only it is not what they surmise. The next step after a negative physical examination is to give an explanation why the symptoms nevertheless exist. It has to be explained what the general public brought.

up on a purely physical conception of disease does not realise; that one's thoughts and feelings can affect the functions of one's viscera. People learn in a general way that fear makes one's knees tremble, but they do not realise how readily fear can make one's heart beat more forcibly and one's peristalsis cease or actually reverse itself. It is easy enough to give them chapter and verse for these facts, and it is best to choose as vivid and impressive instances as possible, proceeding, however, from simple examples such as the fear and knee-weakness sequence. One of the most telling I find is the story of the experiment in which a window is made in a cat's abdomen and then after the anæsthetic has been recovered from, a dog is exhibited to the cat. Peristalsis ceases absolutely. Examples from real life are common enough. The effect on the lower bowel on going over the top in the late war was well known. For more squeamish patients examples are most easily found in the literature of antiquity. Joseph's bowels yearned upon his brother Benjamin, and in the first epistle of John the "bowels of compassion were shut up." Sennacherib thus describes his battle with the two kings of Elam: "The vehemence of my battle line like a bull overwhelmed them. To save their lives they trampled over the bodies of their soldiers as they fled. Like young captured birds they lost courage. With their urine they defiled their chariots and let fall their excrements" (quoted by Cannon). The *Dulce et decorum* ode contains a reference to the *poplitibus trementibus* of the less ardent youths. The common phrases "a heavy heart," "cold feet," and a "lump in the throat" all are founded on the observation of definite psycho-physiological occurrences.

There are quotations and instances to suit all tastes. The physiological and clinical literature has many examples, ranging from the increase in the reducing power of the urine in a diabetic who has become worried, to the change in the loudness of the bruit in a cavernoma angioma within the cranium when the patient thinks hard. I had a young woman patient who vomited every time a young man made love to her, and who nearly died of acidosis during her engagement. Alvarez gives some good examples:—

> "When I was studying the intestinal movements of a man with an opening through the abdominal wall into the first portion of the small bowel, a small balloon connected by rubber tubing to a tambour was passed into the bowel and with it I was able to record every movement that took place. As I sat by the bedside watching, I noticed a sudden rise in the level of the tracing and an increase in the amplitude of the contractions and looking about for some cause I heard the rumble of the steam table as it came down the hall bearing the patient's luncheon. He was hungry and had heard it first. This sudden increase in the activity of the bowel coincident with the arrival of luncheon was observed on two occasions.
>
> "The most striking evidence of a psychic increase in tone and activity was seen in a jolly *bon vivant* whose anal sphincters had been destroyed by a series of operations for fistulas. As a result many of the rush waves down the bowel, instead of stopping, as they normally do at the ileocæcal sphincter or somewhere in the colon, ran on and produced a bowel movement. The interesting point is that in this man the sight and smell and even thought of food produced rushes. They were most annoying at breakfast-time, when after the night's rest the bowel was most sensitive, and as a result he had to eat his breakfast in the bathroom. Ordinarily, except for meal-times, he had little difficulty unless, perhaps, when passing a restaurant he happened to catch an appetising whiff of food, or unless some practical joker among his cronies, knowing his infirmity, began to discuss before him the relative merits of Hungarian goulash and beefsteak and onions. He knew the site of every restaurant in town and never went near one if he could help it."

Sometimes a general explanation along these lines is sufficient to send the patient away permanently satisfied. Very much more often it is necessary to find both particular and general cause of the constitutional upset, and this may be, but is not necessarily a prolonged business.

For example, a certain patient was described as "a queer mixture of shrewdness and ability and of stupidity over symptoms." He complained of indigestion which began in 1920; he was operated on for appendicitis, and afterwards tubercle was diagnosed. He was treated successfully in a sanatorium, and was warned that if he ever allowed his stomach to get out of order it would give an opening for tubercle to flare up. A diet was recommended, he stuck to it, remaining well till his wife fell ill in 1927 and underwent an operation. A week after this he developed a severe abdominal pain of a type that had no relation to meals and was very curious in its time incidence. He was given a long interview, the significance of the commencement of his symptoms at a time of emotional stress was explained to him, and the part played by his anxious temperament and the impression made on him by previous diseases was made clear. He departed apparently satisfied; at any rate, his doctor reported that he never complained again.

The short procedure is to get a history of the development of the symptoms and to focus one's attention round the time of their origin. In most cases it is possible to find factors of a distinctly personal and emotional nature by diligent search, operating at the time of the outbreak of the symptoms. Often it is a matter of the climax of troubles which have been accumulating for some time, but the things that determine the actual outbreak of symptoms at that particular moment is sometimes apparently trivial.

A young woman with attacks of trembling, palpitation, and dizziness, related that they first occurred six weeks previously. She denied a special worry at that time. On going into details we found that she had the first attack while watching a moving picture. She was accompanied at the time by a girl friend with whom she was on perfectly ordinary terms. Nothing had occurred that day to disturb her. Questioned as to the subject of the moving picture, however, she mentioned that at the moment she fainted the heroine on the screen was contemplating suicide. Only then did it emerge that the patient herself had had similar thoughts recently, and this led to an admission of what she had previously refrained from talking about—namely, the presence of a personal conflict revolving round a disappointment in love.

Not only does the discovery of a personal association of this sort give point to one's general explanations to the patient; it leads to the transfer of the patient's interest from the symptoms to the personal difficulties underlying them. The treatment then ceases to be symptomatic and gets down to causes. For this reason, although one has to treat many neurotics with symptoms in many systems—e.g., in the digestive system—one seldom has to treat the symptoms as such. It is neither necessary nor wise to prescribe bismuth or HCl or whatnot in the absence of definite physical indications. There are certain general lines of search that are useful in patients who have to be treated rapidly.

They are in the case of adults: Financial affairs, relationships at work (attitude of employer and fellow employees, rates of pay, chances of promotion, liking for work), domestic affairs (relationships to husband or wife or others, especially parents living in the same house), marital difficulties (temperament as well as actual sex relationships), attitude about children, the question of further pregnancies, unwanted pregnancies, &c. The domestic problems are the most important but professional and business relationships, especially the suitability of a job and chances of promotion, play a larger part than is generally realised. In young unmarried people one asks about the attitude of parents, brothers, and sisters, the hours of work, the choice of a career, type of recreation, and if it seems necessary, the attitude to marriage and to sex itself. Systematic inquiry along these lines can rapidly be pursued with hopeful results if the replies are carefully watched and the manner of giving them, especially negative replies, carefully scrutinised. Often a slight change of expression will denote to the practised observer a hedging on some of the topics touched upon.

"Vasovagal Attacks"

There is a subvariety of anxiety attacks called "vasovagal." There is as much scientific justification for supposing them to constitute a nosological entity as there is for setting apart tachycardia as a disease. The suggestion has been made that vasovagal attacks are a form of epilepsy and some such attacks doubtless are, but in many there is a good deal of objection to classifying them with epilepsy. The vasovagal syndrome is simply a pattern of reaction which may be touched off by a variety of factors from a domestic fracas to a neoplasm of the medulla. The central features of these attacks are a general disturbance of a type suggesting vagal stimulation and a subjective sense of impending death. A sense of constriction in the chest, cardiac inhibition sometimes to the extent of syncope and abdominal pain, are among the principal symptoms in addition to the "angor animi."

The disappearance of these symptoms following simple psychotherapy is sometimes astonishing.

There was some time ago a woman admitted to Guy's with a history of two years' duration of such attacks. She experienced a paræsthesia or numbness involving the left side of the mouth accompanied by a feeling of difficulty in breathing, præcordial pain, and abdominal discomfort with diarrhœa. The "angor animi" was marked. In addition it was stated by her family that her lips went blue during an attack. She was a young married woman without children, and had in consequence of her attacks been advised that she must not have any. It soon became evident that she was very depressed and a few further questions elicited the fact that she was very fond of children, that she was alone most of the day, and that her husband while amiable was a quiet sort of person. On going into the history of the symptoms it appeared that they had begun suddenly while she was on her honeymoon, on the third day of it precisely. It is often unwise to broach such subjects at a first interview, but in this case it did not prove difficult to discover that the honeymoon had been unsatisfactory; there had been attempts at coitus, but for some reason they had not succeeded by the third day and it was on that day during a further attempt and failure that the first attack occurred. The situation and attacks persisted, and a doctor had been consulted who advised that she was unfit to have children and must remain so for at least two years. I wrote to her doctor and asked him to explain to her that the symptoms had originally been provoked by anxiety and frustration and perpetuated by misunderstanding, and that as far as the symptoms were concerned she could have children as soon as she pleased, in fact, the sooner the better. She recovered immediately—she never had another attack. The whole story had been elicited in half an hour.

It cannot be too much emphasised that such rapid results, I would call them as a rule considerable improvements, rather than recoveries, are uncommon; but the fact that they can be achieved at all after so many years suggests, although it does not prove, that earlier treatment such as the general practitioner has the opportunity of giving, may be effective in a much larger proportion of cases than this.

I give these as examples of what anyone with a systematic procedure and some determination can do in treating the commonest types of nervous conditions in general practice without necessarily having to expend a great deal of time. The latter is often necessary, however, in the chronic psychoneurotic whose history of symptoms dates back many years in those with phobias of trains, buses, closed or open spaces, &c., and in many of the depressed type. The simple rules I have given serve, however, for the brief type of treatment.

Hysteria

The treatment of hysterics is along similar lines as regards preliminaries, but gross hysterical disabilities, like paralysis or blindness, allow aggressive methods of actual treatment, as A. F. Hurst has shown. A hysterically paralysed limb is as a rule a very satisfactory object for the psychotherapist; although I have known some that remained paralysed in spite of his best efforts. But a disability of this sort is a far more tangible affair than is usually encountered in psychological medicine which is so full of impalpables. One can make the symptoms change and let the patient see it change in an objective way. This enables a much more rapidly convincing method of persuasion to be employed than is possible with the psychoneurotic anxiety states. An example will make my meaning clearer.

A girl of 20, who had been a stage dancer, was referred to me by my surgical colleague, Mr. W. H. Ogilvie, who had diagnosed a hysterical hip. Six years previously she had slipped and fallen during a performance, and after that had complained of pain in her knees and subsequently in her hip. She had not walked since that time and had received many treatments. She had had a semilunar cartilage in both knees excised, but latterly at least the condition had been considered tuberculous, and she had her hip immobilised at various times in extension or plaster or splints. Ultimately when she came under Mr. Ogilvie's notice and mine she was wearing a patten on the foot of the affected limb, and walked with the aid of a heavy stick. Her left leg seemed on casual inspection to be shortened, and she leaned heavily over on the same side while standing. When walking she lurched violently over on her left side and held her left knee stiff. She complained of pain in the left hip especially, but also in the right hip and both knees. In the recumbent position no deformity or wasting was noticeable and no shortening.

The treatment consisted first in explaining to the patient that there was no physical disease, that she would walk normally if she could get back her confidence in doing so, and that we would teach her how it could be done. The second part of the treatment could be described, if one wishes categorical terms, as persuasion and re-education. It consisted actually in having the patient walk up and down until she was walking practically normally. This took two hours and a half but it was worth the effort, and she emerged cured of her disability. My house physician and myself took it in relays to go on persuading her that she could walk normally and in getting her to do so.

Of course such treatment cures only the symptom. It does not necessarily cure the disease. But in a number of hysterics cure of the symptom is nearly all that is required, and at least to have begun by curing such a disabling symptom gives the therapist a valuable jumping-off ground for the rest of the treatment, which in some cases necessarily includes a prolonged and very technical form of psychotherapy. With the patient just described, the rest of the treatment was simple and not highly technical. It involved re-educating the family to a belief that the patient was really fit so that they might cease fussing about her; in helping the patient to an occupation in life—her business in life during the past six years having been the haunting of hospitals—and in helping her to a more grown-up, less child-like attitude than she had yet attained.

The methods of psychotherapy I have described require no special apparatus, but they require perseverance and accurate investigation and a willingness to spend a reasonable time soon after the patient first presents himself. By these means much time may be saved the practitioner in the long run; he himself will gain much credit, and the patient be saved much misery, grievance, and loss of time.

THE MODERN CONCEPTION OF NEPHRITIS,

AND ITS BEARING ON CERTAIN PROBLEMS OF LIFE ASSURANCE *

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All those who have been engaged in the active practice of medicine during the last 20 or 30 years must agree that there has been an astonishing change in the precision with which a diagnosis can usually be established. However much one may reverence the experience and clinical instinct of the great physicians of the last century and the epoch immediately preceding the war, it would be foolish to pretend that they were capable of identifying and classifying disease in a manner in any way approaching what is possible to-day. If we reflect on what would happen during a teaching round in a medical ward before the war, we remember most brilliant teachers arriving at conclusions which were often accurate as regards the broad nature of the disease, and not infrequently genuinely precise when the post-mortem room revealed the ultimate details, but the contrast between this and a visit to the wards of a modern hospital is really very great. To-day you will go to such a ward and see, for example, a series of cases of this description—an ulcer on the lesser curvature of the duodenal cap, a case of pernicious anæmia, with the blood nearly restored to normal but with subacute combined degeneration of the cord, a case of pulmonary tuberculosis with the disease confined to the right apex, a case of sacro-iliac strain, a case of carcinoma of the fundus of the stomach, a case of tetany due to chronic steatorrhœa, a case of hypertensive cardiac failure with auricular fibrillation, a case of dysphagia due to achalasia of the cardia, a case of diverticulitis with recurrent pain and pyrexia. These are everyday cases, and the point which I wish to emphasise is that you will find precise diagnosis established in every one of them to-day, whereas 15 years ago this was not possible, at any rate as a rule.

I do not wish to imply that this is entirely due to laboratory methods and the help of X ray examination; it is very largely due to these things, but actually precision is often reached to-day through the more exact knowledge which experience, gained by the help of these ancillary services, has given us.

Knowledge of Nephritis

When we come to nephritis it must at once be admitted that there are, in spite of the brilliant work of a host of investigators, enormous gaps in our knowledge which prevent us from achieving that precision which exists with regard to many other common diseases. Anyone accustomed to survey the world's literature dealing with nephritis is aware of considerable divergence of opinion, sometimes between country and country, and even more often between different authorities in the same country. At the same time, I would suggest to you that the last five years have seen the emergence, in many different countries, of an important agreement concerning the major aspects of nephritis amongst a body of workers who have studied the subject deeply, sometimes in collaboration, sometimes independently. These workers, amongst whom I would include Fishberg, van Slyke, Epstein, and Addis in the United States, Achard in France, Volhard and Fahr in Germany, Snapper in Holland, and Gainsborough and others in this country, are steadily reaching close agreement as to the classification of nephritis, both as regards its clinical course, its ætiology, its morbid anatomy, and its biochemical manifestations, and although I think not one of them would suggest that anything approaching finality has been reached, they nevertheless represent an agreed conception concerning the general features of nephritis which is something quite new in the long history of medical inquiry into this subject.

I cannot put before you more than a somewhat fragmentary outline of the major points in this conception, but some of these will, I think, be of value in deciding when, and in what manner, a person with a history of nephritis, or with evidences pointing to nephritis, can be accepted by the examiner for life insurance.

Renal Failure

The first conception to which I would draw attention is that of "renal failure." By this we mean a condition in which so great a proportion of the total kidney substance is temporarily or permanently out of action that the physiology of the body is deranged.

The normal kidney is made up of a vast number of individual units, each of which begins in a glomerulus; nature has provided far more of these units than are essential for life; it is a common observation that half the total kidney substance—i.e., one of the two kidneys—may be lost without permanent impairment to health, and we know that actually between two-thirds or three-fifths of the total kidney substance must be out of action before renal failure is established. A useful analogy may be drawn between renal failure and cardiac failure; each of these conditions may be temporary or permanent, and each of them may be compensated or decompensated. Just as toxæmia may produce acute cardiac failure from which the patient ultimately recovers, so an acute nephritis may produce a condition of renal failure which is not by any means necessarily permanent or fatal. As regards compensation, the analogy is less exact because long-standing compensated renal failure is a much rarer phenomenon than compensated cardiac failure, and is seldom compatible with prolonged good health.

The conception of compensation and decompensation in renal failure depends on recognising that the main function of the kidney is the elimination of those superfluous chemical products which are found in the urine, nitrogenous matter, particularly urea, being the most important. In order that the elimination of these bodies may be accomplished with a minimal loss of water the kidney has the power of concentrating many of them in such a way that normal urine exhibits an enormously greater concentration of urea than does the blood. The damaged kidney shows its failure first of all by a loss of this concentrating power; it still succeeds in eliminating the daily quota of urea and other substances, but can only do this by pouring them out together with considerable amounts of water. In consequence of this we have polyuria as the first sign of renal failure, and this polyuria is a compensatory process because the kidney is still fulfilling its major function of maintaining the blood chemistry practically constant.

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* A communication to the Assurance Medical Society on Nov. 2nd, 1932.

If renal failure persists the kidney becomes unable, even with the aid of increased water excretion, to rid the blood entirely of excess of urea. Uncompensated renal failure is then present and change in the blood chemistry can be demonstrated, this change being most often in the form of an increase in the urea and non-protein nitrogen. The following Table represents the main findings in compensated and uncompensated renal failure :—

—		Renal failure.	
		Compensated.	Uncompensated.
Urine	S.G.	Never above 1020.	Seldom above 1015.
	Urea	Below 2 per cent.	Below 1·7 per cent.
Blood		Urea below 40 mg.	Urea 40–300 mg. N.P.N. 40–300 mg.
Symptoms		Polyuria.	Polyuria. Gastro-intestinal symptoms.

It must next be emphasised that renal failure is a disturbance of function which may occur in any form of renal disease. It may occur during an acute nephritis or as the termination of a chronic nephritis. or it may occur in such conditions as damage to the kidneys from prostatic obstruction, polycystic disease, or tuberculosis of the whole urinary tract. It is a clinical state and not a disease in itself, and the prognosis, when it is present, depends on the disease causing it and the therapeutic possibilities which such disease may exhibit.

Uræmia and Pseudo-uræmia

The understanding of the conception of renal failure is important because it is now considered that uræmia is explicable by the ancient conception of Bright—namely, that it is a chemical intoxication largely due to the accumulation of urea in the blood. For several generations this conception has been rejected because of the frequency of persons dying with obviously diseased kidneys but without any notable increase in the concentration of urea and non-protein nitrogen in the blood. Observers therefore sought for some toxic substance other than urea which might be the principal agent producing uræmia, and it was commonly believed that nitrogen retention, when present, was merely an index of disordered blood chemistry, and that the unknown toxin responsible for uræmia might be present in the absence of these other signs. To-day it is believed by the group of workers to whom I have referred that the term uræmia should be reserved solely for those cases in whom there is gross nitrogen retention. We recognise a condition of compensated renal failure in which there is a normal blood chemistry maintained by the mechanism of polyuria ; we next recognise a condition of uncompensated renal failure with polyuria but with an increasing concentration of urea and other chemical substances in the blood ; and, finally, we recognise a condition of true uræmia in which the blood-urea has become enormously elevated, giving figures always above 150 mg. per 100 c.cm. and usually in excess of 200.

This condition of true uræmia is characterised by gastro-intestinal disturbance and deepening coma. Other manifestations, air-hunger, twitching, and so forth, often accompany it, but these are not essential ; they are the results of varying secondary changes in the blood chemistry, such as lowering of the alkali reserve and hypocalcæmia. If I were asked for the most characteristic clinical sign of true uræmia I would say that it is the occurrence of a metallic or ammoniacal taste in the mouth due to the presence of large quantities of urea in the saliva, and not infrequently recognised as such by the patient.

If this is true uræmia, what is the explanation of the many fatal cases of coma without changes in the blood, but with obvious renal disease at autopsy ? The answer is that these latter are examples of pseudo-uræmia in whom renal disease is accompanied by changes in the cardiovascular system, and that it is this cardiovascular change which produces cerebral effects leading to coma and death. It is often a matter of considerable difficulty to distinguish between the two groups on clinical examination alone. The pseudo-uræmic group is always characterised by elevation of the blood pressure, whilst the evidences of chemical derangement are slight or absent. The fact that these cases are dependent on changes in the lesser arteries and on diminution of the blood-supply of the brain leads to the fact that changes in the retina are present in most of them, chemical changes in the blood and urine are not conspicuous and may actually be absent. In true uræmia, on the other hand, there may be no elevation of the blood pressure at all, eye changes are often absent, but examination of the blood invariably discloses the true diagnosis.

From the therapeutic standpoint the distinction between these two conditions is of the utmost importance, because in true uræmia the indication is to adopt measures such as protein starvation which may alleviate the chemical condition of the blood, whereas in pseudo-uræmia it is of cardinal importance to bring about a change in the cerebral circulation as rapidly as possible, and venesection, lumbar puncture, and the intravenous administration of hypertonic solutions often become of critical importance. A. M. Fishberg, of New York, who has done so much invaluable work on these questions, has also been responsible for the introduction of many felicitous terms which enable us to understand the modern view. He refers to the cerebral manifestations of high blood pressure as "hypertensive encephalopathy" and he would have us speak of "hypertensive retinopathies" in all those conditions where changes of the retina occur in the course of disease or the cardiovascular system include those examples where the kidney is also involved. Surely this is a change well worthy of general adoption. At a time when we know full well that the group of cases in which albuminuria is most conspicuous, that is to say in the nephroses, retinal changes are never observed, it is ridiculous to retain the term "albuminuric retinitis" for a condition which clearly has no necessary connexion with the presence of albumin in the urine.

The Classification of Nephritis

I have felt it necessary to bring before you the above considerations concerning renal failure and true and false uræmia before discussing the classification of nephritis, because I feel that a clear conception of these states is essential for an appreciation of the classification of nephritis which is becoming evolved largely as a consequence of such doctrine.

I hope that I may be forgiven if at this point I interpolate a brief account of classifications of nephritis which have found many adherents in the past, some of which are current at the present date.

It is impossible to approach the subject of classification without reference to the past, and I must remind you that Bright was exceedingly cautious in avoiding any hard-and-fast differentiation into groups. Study of the medical history of the last century indeed emphasises the lack of uniformity in teaching, although it was perhaps unfortunate that in the absence of unity of conception individual writers tended to be dogmatic in dividing renal disease into various groups. It was largely as the result of the work of Wilkes and of Bartels that it became customary to distinguish two main varieties of chronic nephritis to which were attached the terms "chronic parenchymatous nephritis" and "chronic interstitial nephritis," the former being essentially a condition characterised clinically by dropsy and albuminuria, and the latter one in which there was a small contracted kidney in a patient dying of uræmia or cerebral hæmorrhage without œdema. The supposed occasional transformation of a case belonging to one group into a condition which flung him into the other group has been the cause of bewilderment and despair to generations of medical students. Many names, such as those of Gull and Sutton and of Weigert, might be quoted amongst the pioneers who exposed the futility of this classification; their voices were unfortunately not heard, although the rapid growth of histological inquiry soon made it apparent to the pathologist that there was no justification for the acceptance of it.

The first decade of the present century saw the genesis of a "functional" classification of nephritis which originated in France following the revival of biochemical investigation, chiefly as the result of the observation of Widal and his school. This school sought to divide Bright's disease into a group of patients in whom the damaged kidney was unable to excrete nitrogenous substances and hence produced uræmia, with, in opposition to this, a group in which the disease produced failure to excrete chlorides and other salts and hence produced œdema. At the present time it is unnecessary to say very much concerning this classification beyond that it had a transient value in focusing attention on biochemistry, and that the course of time has amply demonstrated not only that many patients could be placed in both groups simultaneously, but that modern biochemistry has rejected the theory that there is a type of kidney essentially incapable of excreting chloride.

To-day we are approaching a classification which has a sound basis of morbid anatomy and is also compatible with the various clinical manifestations of nephritis. Admitting that the widespread body of observers to whom I referred in the opening paragraphs of this paper have not yet reached agreement as to details, it is becoming more and more generally recognised that three great groups are to be distinguished. Of these the central group is constituted by the true inflammatory diseases of the kidney following acute infections. This great group of glomerulo-nephritis may be subdivided into a relatively benign group in which scattered foci of inflammation arise during an acute infection, and a second group in whom the inflammation is spread diffusely through both kidneys. This latter subgroup includes all those serious cases of nephritis which, beginning usually as a streptococcal infection, are seen again and again in the medical wards of the general hospitals, and eventually terminate fatally, usually after a very chronic course. In very severe cases the initial effect may be so tremendous as to produce renal failure and death from uræmia. More often an œdema of gradual onset is accompanied by a slowly rising blood pressure, and after waxing and waning for long periods tends to subside as renal failure slowly appears. Death will occur from true uræmia or from cerebral hæmorrhage or from pseudo-uræmia, according as the factor of glomerular destruction or of increasing hypertension is predominant. (See Figure.)

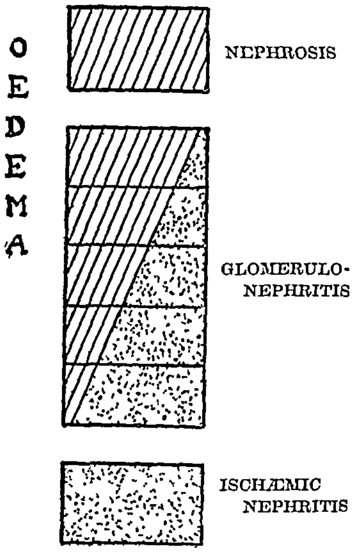

Diagram to illustrate the varieties and clinical phenomena of nephritis. Sub-varieties of glomerulo-nephritis are indicated. Shaded area = albuminuria; stippled area = hypertension.

Now in sharp opposition to this great group we recognise two other groups which have little if anything in common either with one another or with true inflammatory nephritis. The first of these is that which has been called "nephrosis." Here we have, clinically, an intense albuminuria, with or without œdema, but without either marked hæmaturia, increase in blood pressure, changes in the retinæ, or any tendency to uræmia. On the histological side we recognise the association of this group with kidneys showing no evidence of change in the glomerulus, but changes, purely degenerative in character, in the renal tubules. The recognition of this group is due largely to the work of Epstein, and if at the present day there is a tendency to reject his belief in the invariably benign character of nephrosis, it remains true that the prognosis in many examples is relatively good. Perhaps the most important lesson from his work has been that whereas even five years ago there was a tendency to say that renal œdema was an entirely mysterious phenomenon, it is now becoming agreed in all quarters that diminution of the density and osmotic capacity of the blood-plasma, following leakage of albumin into the urine, is the mechanical factor responsible for the production of renal dropsy. Examples of nephrosis are to be found in cases where the kidney has been damaged by the accidental or suicidal administration of mercurial poisons; another group is that known as lardaceous disease; but many cases have been reported arising apparently spontaneously. The great difficulty concerning nephrosis is that a certain number of these latter cases are found, with the passage of time, to develop hypertension and renal failure. These are examples which probably have been mistakenly diagnosed at the outset, being really cases of diffuse glomerulo-nephritis in which the initial glomerular damage was so slight as to escape recognition.

At the further extremity of the scale we find another main variety, contrasting vividly with nephrosis and constituting the third of the great main groups of renal disease. This is the division which includes all those cases in which the kidneys are damaged by changes in their blood-supply following some generalised vascular degeneration. Perhaps the best name to give to this group is "ischæmic nephritis." The outstanding clinical manifestation of these is hypertension, the outstanding feature of their morbid anatomy is sclerosis of the kidneys and spleen, with hypertrophy of the heart. Several subdivisions of this group are becoming recognised, but I do not wish to complicate the story by entering into fuller description of these beyond saying that far and away the most frequent cause of ischæmic nephritis is that mysterious condition which we speak about as "essential hypertension" or "hyperpiesia." I cannot too forcibly remind you that death in this group arises far more frequently from cerebral catastrophe or from cardiac failure than from renal failure: many authorities have stated their conviction that less than 10 per cent. of all such patients die of uræmia and renal failure, but many pathologists, finding in the post-mortem room a body with conspicuously shrivelled kidneys, incline even to-day to group all such cases as "chronic interstitial nephritis." Very brief histological examination of other organs, such as the spleen, should be sufficient to demonstrate that to regard such cases as primary diseases of the kidney is to fall into grave error. Sir William Gull, many years ago, had occasion to question the conception of the great Bright in this respect. Lecturing on some preserved specimens consisting of a large heart and two contracted kidneys, he said that not these alone but the entire man should have been included in the vase.

I do not wish it to be supposed that there are no clinical difficulties as regards the allocation of certain cases to this last group. True inflammatory disease of the kidney may be so insidious in its onset, and may be accompanied by such widespread arterial change, that hypertension is altogether predominant in the picture, but for every case of true chronic nephritis of this type there are probably 50 in which primary arterial disease is mistakenly classed as chronic interstitial nephritis.

Nephritis and Life Insurance

I fear it may be asked what practical bearing all this complex matter may have on life insurance examination. My reply is that although each of these groups represents a condition dangerous to the patient's life, the degree of danger varies considerably, and that the growth in popularity of short-term policies makes it expedient for us to be able to recognise those cases which are acceptable at increased premiums.

The first thing which I would stress from the point of view of life insurance examination is the extreme importance of accurate blood-pressure estimations in all cases falling into the category of nephritis. I think that it is a very serious mistake to reserve blood-pressure estimation for applicants in the last decades of life. Essential hypertension may appear at an age as early as 20. Minor degrees of renal damage in pregnancy may easily escape observation and may set up hypertension with fatal effects a few years later; I think that no woman who has borne children should be accepted for life insurance without very careful consideration of her history and of her blood pressure. The personal factor of the examining medical man is of course the great difficulty in this respect; the present generation of medical students is undoubtedly much better instructed as regards hypertension than were its predecessors, but it would be idle to pretend that the estimation of diastolic pressure, or even interpretation of it, is to-day a matter for any but the expert.

The next point I would emphasise is that careful examination of the urine remains of major importance, and that if no albumin is present on ordinary clinical examination it is practically impossible for renal failure even in its earliest stages to be present, and there is no indication that it is likely to occur at a later date. In other words, observation of the specific gravity of a urine which contains no trace either of sugar or of albumin is, for practical purposes, superfluous.

The determination of the prognosis in any single case belonging to any one of the groups I have mentioned must be a matter for expert consideration. Perhaps it is well to mention those signs which should lead to immediate and final rejection; of these I would say that definite changes in the blood chemistry and the presence of exudates or hæmorrhages in the retinæ are the most certain. At the other end of the scale I would say that qualified acceptance can usually be given with safety to cases of nephritis which, five years after onset, exhibit albuminuria as the sole evidence of disease, and that mild degrees of hypertension, without albuminuria, without cardiac involvement, and with a systolic pressure below 180 and a diastolic pressure below 100, tend to be far too heavily loaded at the present time.

It may seem that I have delivered a lecture of great complexity in order to conclude with a handful of platitudes. I can only plead that I have attempted to bring before you a conception of nephritis which holds out genuine promise for the future.

THE ANATOMY OF ASTHMA
AS DISCLOSED BY LIPIODOL INVESTIGATION

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(WITH ILLUSTRATIVE PLATE)

Although recent investigations into the bio-chemical, bacterial, and nervous relationships of asthma have rendered our knowledge of the disease less obscure, hitherto its pathological anatomy has remained entirely a matter for conjecture. The introduction of the use of lipiodol, however, promises to throw light on the subject by the opportunity it affords of studying anatomically the condition of the bronchial tree and its ramifications in the asthmatic patient, both during his paroxysms and in the intervals between attacks. Moreover, lipiodol by its therapeutic action may give a degree of relief even in intractable cases, which is well worth the apprehensive discomfort felt by the asthmatic patient when faced with the prospect of even a small operation.

Ordinary X ray examination of the chest has disclosed that in 300 consecutive cases of asthma 39 per cent. appeared normal and 61 per cent. presented complications [1] incidental to but not necessarily an essential part of asthma. In place of conjectural induction based on shadows of varying density, investigation of the bronchial tree in asthma by means of radio-opaque lipiodol affords sounder basis for differentiating the normal from the pathological, and will possibly hasten an advance hitherto denied owing to the lack of exact anatomical information which autopsy has failed to produce.

THE RESPIRATORY MECHANISM

Elsewhere I have dealt with asthma associated with chronic bronchitis, bronchiectasis, and the permanent irregularities of the bronchi revealed by lipiodol. *The present paper is restricted to a study of the* clinical complex known as the Trousseau type of asthma. Ætiologically this condition may be regarded as attributable less to morbid change than to physiological defect as the main factor: the result of what may be termed a delirium of the respiratory nervous control, brought about by incoördination of the respiratory autonomic mechanism, in which the vagus impulses dominate and sympathetic action is in abeyance. Whatever the immediate conjectural cause of that disturbance, whether chemical, mechanical, or psychological, the paroxysm produced would seem to be dependent on an inherited predisposition of the respiratory centre to respond to the stimulus of some biochemical agent, possibly a product of metabolism, or nutritional defect, as a sequel to the deprivation of necessary endocrine secretion or lack of simple salts.

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[1] Bray, G. W.: Asthma, Hay Fever, Eczema, Migraine. London, 1932.

In the production of asthma there is, I would suggest, a definite and inseparable relation between the modes of action of the vagus nerve and of the sympathetic; and further, that whilst asthma is the clinical evidence of dominant vagus action, chronic bronchitis is the outward expression of sympathetic predominance. The close relationship between the two clinical conditions must be recognised as calling for their joint investigation before any real progress can be made in their cure. In the autonomic nervous system controlling the bronchial tree the functions of the vagus and sympathetic are antagonistic, the former constricting, the latter dilating the bronchi. Overaction of the vagus, productive of the clinical picture known as spasmodic asthma, suggests the possibility of the opposite phenomenon, dependent on dominant sympathetic impulses.

In normal respiration the dual nervous control maintains an even balance, the sympathetic exerting its influence in inspiration by causing some dilatation of the air-passages, the vagus in expiration by constricting them. In health there is physiological harmony and coördination between the two controlling factors. Disturbance of the balance allows prevailing vagus impulses to bring about spasmodic asthma; between the paroxysms sympathetic reaction, as a complementary part of the process of respiration, shows itself by the wheezing, associated with the complete freedom from respiratory obstruction, which brings relief to the victim. The dilatation of the bronchioles in asthma is the result of the predominant sympathetic action, which may involve the whole or part of the lung, or only a single branch of a bronchus. It is the distribution of this sympathetic control of the air-passages in clinical asthma which the use of lipiodol has been so successful in demonstrating.

TECHNIQUE OF LIPIODOL INJECTION

In my opinion examination by lipiodol is correct procedure for all asthmatic persons over the age of 10 years, whilst it may be administered with satisfactory results to younger subjects, as in one of my cases, a child 5 years old. Lipiodol, being chemically and physiologically almost inert, is not a bronchial irritant and seldom precipitates a paroxysm. But to anticipate any exacerbation during the process of injection, and to control the bronchial reflex, 10 minims of adrenaline 1 : 1000 are given to the asthma patient hypodermically immediately before the lipiodol is injected.

The small operation of injecting lipiodol is a procedure which requires a little practice. I personally inject via the cricothyroid membrane, using novocain ½ per cent. intradermally as a local anæsthetic; 7½ minims of cocaine 5 per cent. are next introduced into the (adult) larynx to abolish the cough reflex. The injection is given very slowly with a curved trocar and cannula of my own pattern. The lipiodol makes its way by gravity along the bronchial tree; if too much is given it may occupy the whole lumen of the tube and cause collapse of the lung, whole or in part, or imperfect distribution is likely to ensue. Lipiodol makes its way not only by gravity but by diffusion, spreading equally over the whole inner surface of the tube. The maximum for an adult is about 20 c.cm. More than this is apt to get into the alveoli, especially if the patient coughs and overcomes the sphincter action where the bronchiole becomes alveolus, or if there is frank emphysema. If the alveoli are injected then the bronchi will be obscured; one cannot see the branches of the tree for the leaves. For a child 3–5 c.cm. is enough. The few accidents which occur in lipiodol injections are due to failure in technique.

Provided there is no spasm of the bronchial muscles the radio-opaque lipiodol penetrates with remarkable freedom into the minutest ramifications of the bronchial tree and, unless there is emphysema or the patient coughs, it will stop short of the alveoli. If there is spasm of the bronchial muscles, or if there is spasm in a particular area of lung, it will not penetrate. Most of the lipiodol is coughed up; some may be coughed up and swallowed, when it will pass the stomach unaffected by gastric juice but, coming in contact with the lipase of the pancreatic juice, the lipiodol (which is a very stable oleate in an oily solution) is broken up and some, seldom serious, iodine intoxication may ensue.

DR. CHRISTOPHERSON: ANATOMY OF ASTHMA

Legends to Illustrations on Special Plate

FIG. I.—Spasmodic asthma; attack during injection. The lipiodol has not penetrated far into the bronchi owing to exacerbation of asthma during injection. Compare this film with Fig. II., where lipiodol has entered the bronchioles, the asthma being quiescent.

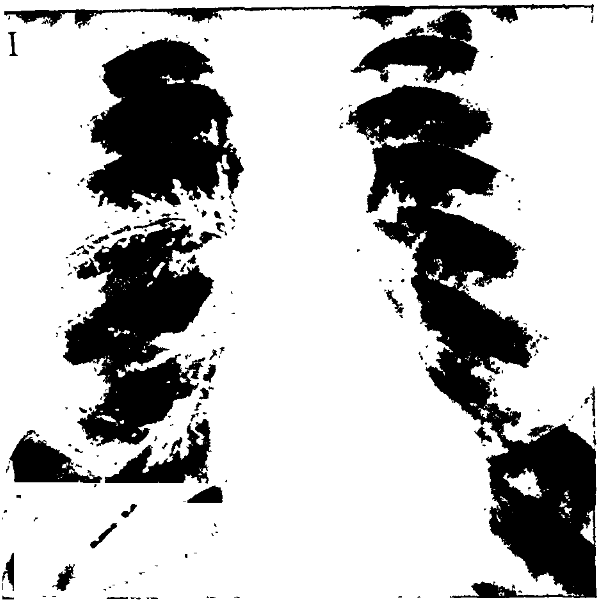
FIG. II.—Woman aged 32. Typical spasmodic asthma showing irregularity in outline of bronchi (beading). Network of small dilated bronchioles.

FIG. III.—Spasmodic asthma with some emphysema in upper and middle lobes of right lung.

FIG. IV.—Spasmodic asthma. Right side of the thorax. Some of the larger bronchi are dilated and varicose, retaining a good deal of the lipiodol, but the characteristic network of dilated small bronchioles is shown in the peripheral zones of the lung.

FIG. V.—Aggravated case of spasmodic asthma of many years' standing. On the right side the appearance is characteristic of lipiodol given a week previously; the remaining lipiodol is situated within the alveoli giving a punctate "scarlatiniform rash" pattern. Note on the left side, with lipiodol recently introduced, the network of dilated smaller bronchioles. In some places in the upper part of the lower lobe the lipiodol has entered the alveoli (showing emphysema). In the lower part of the left lower lung the bronchi appear like snapped-off sticks (better shown in the lateral view), probably due to local constriction of bronchi.

FIG. VI.—Lateral view of the right side of the thorax in case of aggravated form of asthma. Some of the larger bronchial tubes are varicose, but in the lower lobe they appear as if snapped off short (contraction due to local area of asthma spasm). The bronchioles in the middle lobe are dilated and some lipiodol has entered the alveoli (showing emphysema). Note the network of dilated small bronchioles in upper lobe, which is a characteristic appearance in asthma films.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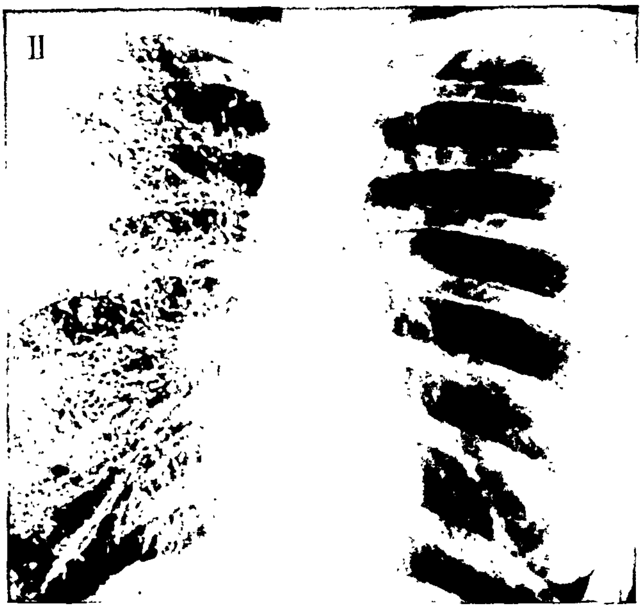
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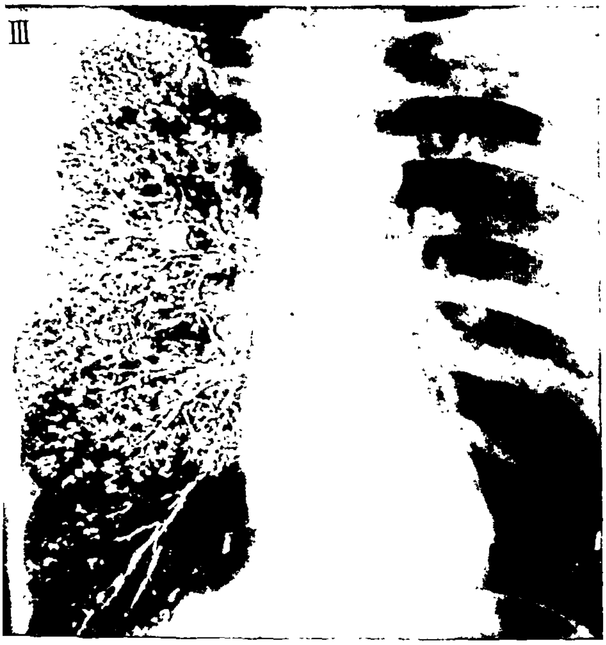
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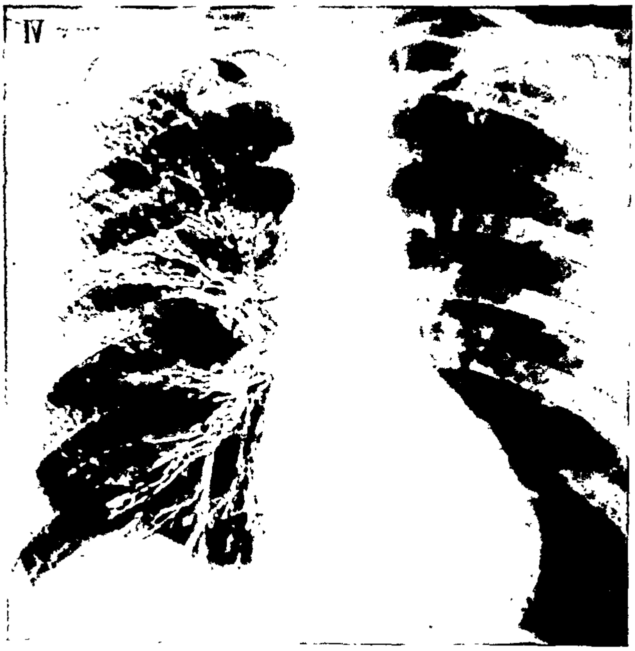
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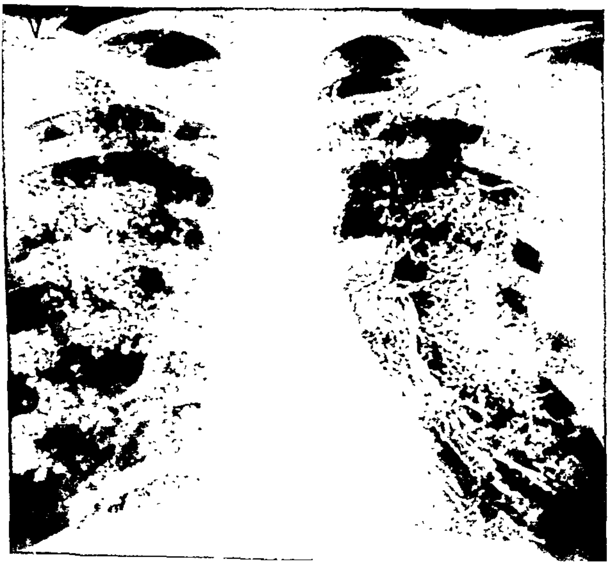
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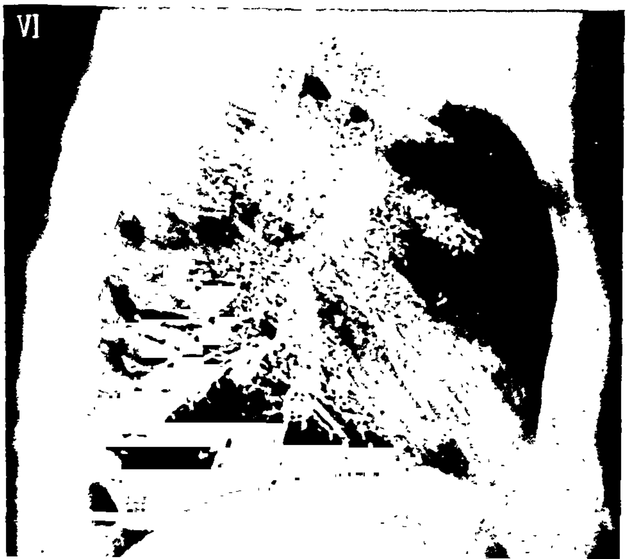
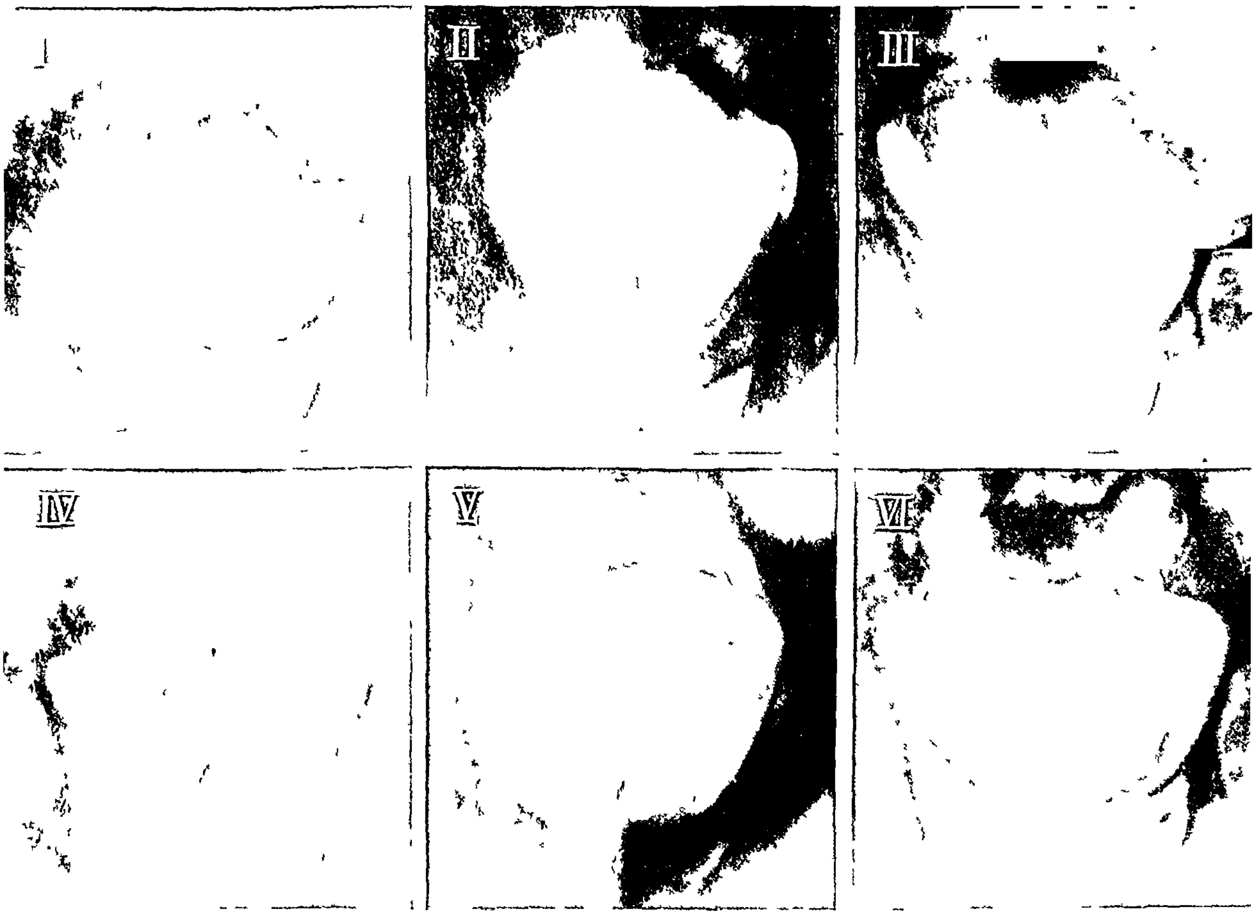
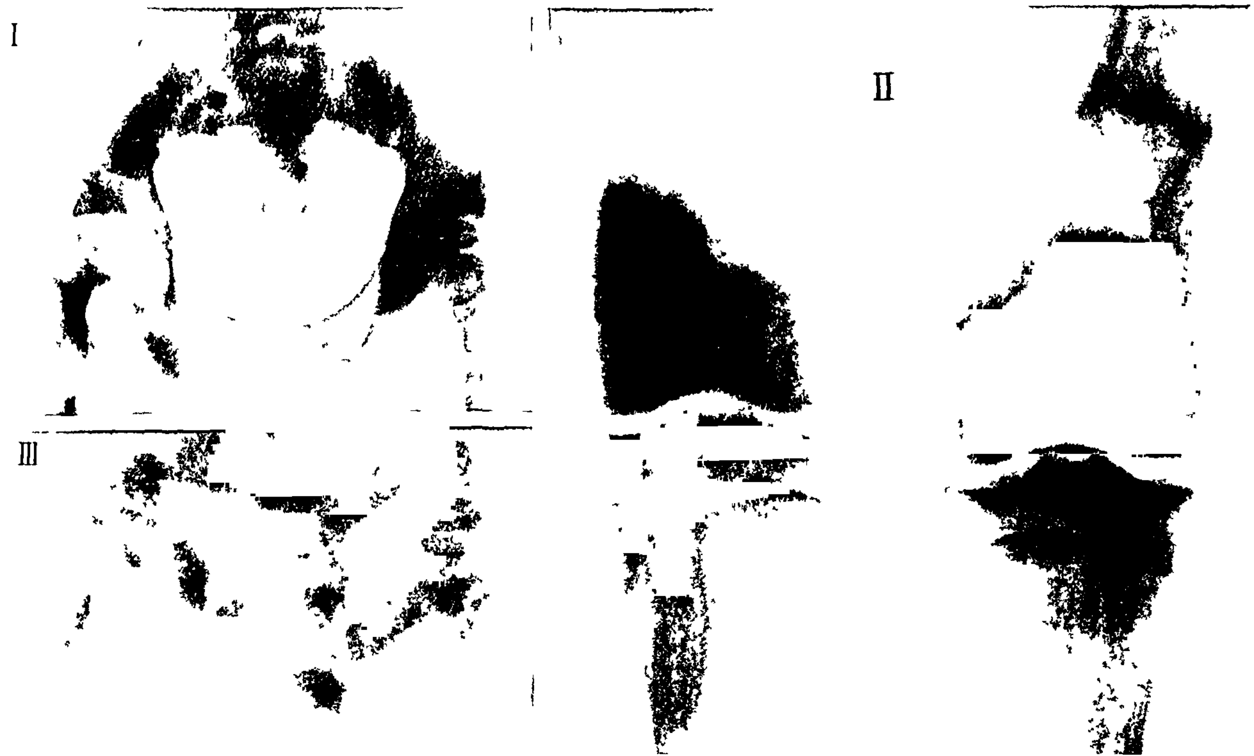

VI

DR. ROSS· RADIOGRAPHIC DIAGNOSIS OF PROSTATIC ENLARGEMENT

(*Radiograms by Dr J F Bromley*)



DR BRAILSFORD SLIPPING OF EPIPHYSIS OF HEAD OF FEMUR



X RAY APPEARANCES

When examination by X rays is made directly after the introduction of lipiodol one of three pictures may be presented.

(1) The clinical condition of asthma is a general one, affecting the whole lung, with the bronchioles usually in a state of dilatation and therefore free to the passage of lipiodol into the entire bronchial tree. This, the most common condition, presents the characteristic mesh-like appearance of dilated bronchioles, together with irregular network of smaller tubules, whilst the larger bronchi show an apparently normal calibre. The potential sphincter at the junction of the terminal tubules with the alveoli generally, for the time being, prevents the further passage of lipiodol unless the patient happens to cough, thus relaxing the sphincter and allowing the succeeding inspiration to force fluid into the alveoli. In cases of emphysematous distension of the lung tissue, which entails loss of the sphincter control, similar entry of the fluid into the alveoli may occur. Even in the absence of cough or emphysema examination on the day following injection will show that the lipiodol has invaded the alveoli, yielding a typical punctate stippling or mottled cluster of grapes appearance (particularly in those portions of the lung which happen to be emphysematous), and presenting a marked contrast with the clearly outlined irregular network of the finer bronchial tubules due to sympathetic domination.

(2) According to the state of the bronchial tree the picture may show, in certain cases, a local or patchy distribution of the affected parts of the lung; constriction of the bronchioles in one area having prevented entry of the lipiodol and elsewhere, under sympathetic action, the dilated bronchioles having allowed the fluid to pass.

(3) Less commonly there may be shown little, if any, penetration of lipiodol into the tubes in consequence of sudden vagal constriction of the bronchi or bronchioles, as in the rare event of a paroxysm occurring during the operation.

These pictures are illustrated in one or other of the six radiograms I have selected, the legends of which speak for themselves.

CONCLUSIONS

In explanation of the more usual result of lipiodol injection, with its free entry into the whole bronchial tree, it may be suggested that, in ordinary cases of asthma, this quiescent stage marks the phase of sympathetic action responsible for the relaxation of the bronchial musculature and so the opening of the bronchioles. In the spasmodic stage the converse is brought about during the phase of vagal impulses leading to constriction and obstruction of the respiratory passages. The two phases of antagonistic nerve impulses governing the phenomenon of asthma, however, do not necessarily involve the whole lung, but may be confined in their action to a part of a lobe, to a single bronchus, or to an isolated area. Further it would appear that, in those who have suffered from asthma for some length of time, certain complications, made manifest by the use of lipiodol, have led to permanent dilatation of the alveoli—i.e., emphysema dependent on the mechanical effect of bronchial obstruction, the constricted lumen imposing a barrier to the forcibly expired air during a paroxysmal attack.

In some cases there is seen to have resulted a permanent dilatation of the bronchial tubes with beading and varicosity, possibly the effect of constant over-action of the sympathetic causing the relaxed tubules to become still further dilated by the explosive force of the asthmatic cough. On the other hand, the lack of evident change in the calibre of the larger bronchial tubes, in asthma as well as in chronic bronchitis, may be due to the cartilaginous support and the comparatively small amount of dilatable muscle in the bronchial walls.

SUMMARY

(1) Lipiodol affords a valuable means of studying by X ray examination the anatomical distribution of the bronchial tubes and their ramifications.

(2) Lipiodol will demonstrate the permeability of the bronchioles and smaller branches in asthma and bronchitis, whether in a state of constriction or dilatation, and the extent of free entry into the alveoli.

(3) The antagonism of the dual nervous control of the bronchial tree is demonstrable as playing an important part in asthma and chronic bronchitis—the vagus in causing constriction and the sympathetic dilatation of the bronchioles.

(4) Lipiodol is also of value from its therapeutic action in cases of the clinical complex known as asthma.

DR. ROSS: RADIOGRAPHIC DIAGNOSIS OF PROSTATIC ENLARGEMENT

Legends to Illustrations on Special Plate

FIG. I.—Normal aerocystogram. A rather large bladder.

FIG. II.—Large intravesical projection of prostate with a distended bladder.

FIG. III.—Same as Fig. II. after prostatectomy. Note the bed of the prostate, and the tags of tissue which have been left behind, and compare the capacity of the bladder in its present state with that before operation.

FIG. IV.—The prostate is enlarged and occupies almost half the bladder: the bladder wall is thickened and trabeculated but the bladder is not yet dilated (bladder in systole).

FIG. V.—Another example of enlargement of the prostate.

FIG. VI.—Same as Fig. V. after prostatectomy. The area to the right is a collection of gas in the colon.

DR. BRAILSFORD: SLIPPING OF EPIPHYSIS OF HEAD OF FEMUR

FIG. I. (Case 1).—Radiogram of the pelvis and hip-joints of a boy aged 16, showing on the left side marked slipping of the epiphysis of the head of the femur. Note the well-defined metaphyseal periphery of the epiphysis and the woolly outline of the extremity of the neck of the femur. On the right side there is thickening of the metaphysis; the epiphyseal border is well defined, whereas the diaphyseal border is woolly. Broadening of the sacro-iliac joints indicates similar disturbances of ossification.

FIG. II.—Radiogram of the knee-joints of the same patient as Fig. I. (taken on the same day), showing site of osteotomy of the right femur. Note the irregular extremity of the diaphysis of the fibula on the right side and the broadening of the metaphysis, with a regular epiphyseal border, indicating that growth is chiefly taking place from the diaphysis. The metaphyses of the other bones do not show any definite changes.

FIG. III. (Case 3).—Radiogram of the pelvis and hip-joints of a youth aged 21. There is general rarefaction and softening of all the bones as indicated by the woolliness of outline, the bending of the necks of the femurs, and the crushed triradiate pelvis. The metaphyseal borders of the epiphysis of the femur heads are still relatively well defined, but the outline of the extremities of the ends of the diaphysis is indefinite.

RADIOGRAPHIC DIAGNOSIS OF PROSTATIC ENLARGEMENT

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(WITH ILLUSTRATIONS ON SPECIAL PLATE)

The prostate gland, lying as it does at the neck of the bladder, is in an unrivalled position, when diseased, to disturb the function of the bladder. In senile enlargement (to use a term which does not commit one as to the pathological process underlying the condition) we have a remarkable example of how the middle and lateral lobes have no other outlet for their expansion but to transgress upwards inside the sphincter vesicæ to the vesical outlet. Behind it is prevented from too great an expansion by the strong fascia of Denonvilliers, and below by the superior layer of the urogenital diaphragm. Apart from symptoms due to distortion and compression of the common ejaculatory ducts—e.g., aspermia or sexual neuroses—the urinary trouble will occur only when the intravesical enlargement has succeeded in elevating the apex of the trigone sufficiently to reduce the size of the bladder outlet by its ball-valve action. It is then that the patient complains of symptoms, and as the "hump" increases in size, so the symptoms increase in severity and frequency.

At this stage the practitioner relies solely on a rectal examination for confirmation of his diagnosis, whilst the urologist will employ his cystoscopic dexterity. If we disregard carcinoma of the prostate which is confined at first to the posterior lobe and initially produces more general and referred symptoms than local disturbance, and is not visible by cystoscopy until it has infiltrated and ulcerated through the mucous membrane of the bladder, cystoscopy has many disadvantages: (1) owing to contracture of the neck of the bladder it may be impossible to pass the cystoscope; (2) hæmorrhage from the passage of the instrument may cloud the field and prevent distinct vision; (3) gross sepsis may also cloud the field; (4) severe pain may necessitate an anæsthetic (general or spinal); and (5) an expert cystoscopist may not always be at hand.

Apart from these considerations, we are all familiar with the case of the man who has an unmistakably enlarged prostate when examined per rectum, but, on opening the bladder, is found to have either no intravesical enlargement or very little enlargement, but nevertheless has a contracture at the neck of the bladder which is responsible for his symptoms. This is the so-called "prostatic bar obstruction," "contracture of the neck of the bladder," or "prostatisme sans prostate." On the other hand, there is the patient who, from the history, has a typical enlargement of the prostate, yet on rectal examination shows little palpable enlargement; if we are successful in passing the cystoscope, we may find an enlarged middle and perhaps also lateral lobe elevating the anterior half of the trigone from the prostatic urethra backwards.

If any of the contra-indications to cystoscopy are present, absolute diagnosis between the two conditions—senile enlargement and prostatic bar obstruction—is a matter of uncertainty and guesswork, and as the latter condition does not necessitate an operation as serious as prostatectomy, the distinction is of some importance.

AEROCYSTOGRAPHY

The purpose of this paper is to emphasise the value of diagnosis of prostatic enlargement by aerocystography—i.e., radiography of the bladder after it has been filled with air. At the outset let it be understood that this is by no means an original method of diagnosis. Koller, in 1904, described a case of diverticulum of the bladder diagnosed by pneumoroentgenology, and the American radiologists have employed this method in the diagnosis of prostatic enlargement and in the visualisation of pelvic conditions causing pressure on the bladder. The technique is extremely simple, but differs somewhat from that of the authorities read. I regard this method as one of the essential links in the chain of investigations to be carried out in any case of suspected enlargement of the prostate. It is a rational proceeding, and one would expect it to be recommended and used generally although, in this country at any rate, this is not the case. The probable reason why it is not in general use is that cystoscopy has developed to such a degree that no other method is necessary unless cystoscopy fails. Where cystoscopy is unsuccessful, its value is obvious. Where cystoscopy is possible, aerocystography is still a valuable asset, and in my opinion gives a far more definite and helpful picture. It seems to me a superior method, because where a prostate is large its size cannot be gauged satisfactorily by cystoscopy, owing to the proximity of the lens to the gland. In a short series of 30 cases in which I have used the method the results are such that I have come to place absolute confidence in it. At the present time we would not consider cystotomy unless an aerocystogram had been taken previously.

Apart from enlargement of the prostate, aerocystography may be used in other conditions: (1) vesical calculi; (2) neoplasms; (3) foreign bodies; (4) compression from without—e.g., tumour of the uterus, ovary, or sigmoid; and (5) vesical diverticula. But as these conditions can be diagnosed more satisfactorily by other and simpler methods, such as cystoscopy in tumours of the bladder, I shall here only consider its practical application to enlargement of the prostate.

TECHNIQUE

The method can only be employed when the bladder is completely empty, and even small quantities of urine may obscure the picture. When the patient is admitted to hospital or nursing-home, if he has acute retention it will be necessary to tie a catheter in his urethra, this being done, of course, with the utmost sterile precautions. If there are 15 oz., or less, of residual urine, the whole may be decompressed at once, but if not, it will not be safe to remove more than 15 oz. at the time, the rest being withdrawn at the rate of 5 oz. every hour. It may take three or four days to completely empty the bladder, depending, naturally, on its capacity. Should there not be acute retention, the investigation can be carried out at any time.

When the bladder has been emptied as completely as possible and if the condition of the patient is good, the large rubber catheter is removed and a smaller one is substituted. It is essential that before taking the X ray picture the colon should have been well cleared out. The catheter I use is a No. 5 French. This should be new, or boiled at the most twice, since boiling destroys the rigidity of the rubber—a very necessary factor with small catheters required to pass through a contracture at the vesical outlet. It is better to use a small catheter than a large one with a small connexion, for the large diameter may obscure a small intravesical enlargement of the prostate. Once the catheter is passed, it is better to postpone injection of the air until the patient is on the Potter-Bucky diaphragm. To the distal end of the catheter is attached a 20 or 50 c.cm. record syringe (it will be found that this fits quite air-tight), the piston being withdrawn to its utmost. The patient is asked to relax the muscles and to refrain from straining as far as possible, and to give warning as soon as he feels that his bladder is full, or when he feels as if he wished to pass urine. The piston is gently charged home. The patient will say that he felt a "whiff of something" going into his bladder. The catheter is clipped with a Spencer Wells artery forceps by an assistant, the syringe is then detached from the end of the catheter, and the piston is again withdrawn to its utmost. With the piston at its utmost, the syringe is once more attached to the end of the catheter, the Spencer Wells is released and the piston charged home again. This process is repeated, the amount of air injected being easily estimated from the number of fillings required. Depending on the capacity of the bladder, a time will arrive when the patient will say his bladder is filled. If this is large, it will be seen distended above the pubes. If not, the patient's own sensations are not very reliable, especially in a nervous patient, and as it is necessary for a good film that no part of the bladder wall should be collapsed, it is better to rely on the actual pressure of the air inside the bladder. As soon as the bladder becomes over-distended there will be a positive pressure of its contents, which is readily gauged by releasing the Spencer Wells without removing the syringe; when, if a positive pressure really exists, the charger will come back on you. This is a most reliable sign, and it is then quite safe to occlude the catheter and take the radiogram.

The essential point in the radiography is that the kilo-voltage of the tube should be kept low, as is usual when dealing with a good background of air giving excellent contrast (40–50 K.V. should be quite sufficient). The obliquity of the tube is the same as for ordinary radiography of the bladder. Pfahler also takes a posterior film with the central ray directed obliquely upward and forward, so as to project the sacrum and coccyx above the field. I have found this unnecessary, since just as much information can be obtained from the anterior film. The posterior film is merely confirmatory.

It may seem a laborious process to remove and reinsert the syringe perhaps 20 or 30 times. American radiologists use a Higginson's syringe, which is certainly easier, but which lacks the ability to estimate the exact moment at which a positive pressure is set up within the bladder, and further, the exact capacity of the bladder cannot be easily estimated in this way. I have also used a pressometer, which would appear to be very exact, but in point of fact is not, because the surface tension of the mercury in the vertical tube is sufficient to overcome the first few millimetres of mercury rise, which are so important. Further, the capacity of the bladder cannot be estimated at all.

There is no danger of rupture of the bladder if the precautions stated are observed. The patient undoubtedly feels much discomfort, but as the bladder has only to be distended for a few moments whilst the film is being taken this is not a great inconvenience. Some difficulty is often experienced with a malignant prostate where the vesical sphincter is infiltrated with new growth, and where sphincter control is lacking, air being often forced out of the urethra outside the catheter, but even in these cases the taking of the film is so quick that enough air remains in the bladder to give good visualisation of its interior.

INTERPRETATION

Interpretation is easy. In an ordinary X ray film of the pelvis, very little, apart from the bony framework, can be seen in the normal case. It is possible to see vesical calculi, unless they are pure uric acid stones; also phleboliths. Tumours cannot be seen in the ordinary way (unless calcified—e.g., calcified uterine fibroid pressing on the bladder), and the explanation is simple. There is not enough contrast. I do not wish to make too much of this, however, for papillomata and carcinomata are best observed by cystoscopy. It is in enlargement of the prostate that aerocystography is of most value.

A normal bladder shows an outline of air, which is usually circular, and with absolutely smooth walls. Its capacity, as estimated by the number of fillings required, should be about 300 c.cm. When the film is taken at the correct angle the lower margin of the bladder should be seen about a quarter of an inch above the margin of the pubic bones (*Fig. I.*), quite distinct, running laterally within the ileo-pectineal lines to the iliac bones. The extent to which it rises above the promontoric line depends, of course, on its distensibility. With an acute retention of short history it usually remains within the pelvis, but with a long history its capacity may have increased to 600–900 c.cm., and it may rise as high as the upper margin of the ala of the sacrum and the fifth lumbar spine. This may not seem very high, but if it is remembered that the film is taken obliquely at an angle of about 15°–25°, it will be realised that the impression given is a false one, and that in reality the superior margin of the bladder is actually at a higher level than this. A large bladder is usually ovoid in shape owing to lateral compression in the pelvis, and may be displaced somewhat to the right by a loaded pelvic colon. Gas in the sigmoid often renders the picture indistinct, and it is therefore important to clear the bowel before the radiogram is taken. Often the contrast is so good when air is present in the rectum that it is possible to visualise the valves of Houston. With an intravesical enlargement of the prostate (middle and lateral lobes), the first thing that is noticed is the projection that it makes at the base of the bladder. It is quite definite, conical in shape and unmistakable. Its edges are continuous with those of the inferior vesical margin. There is no other shadow like it, and it is not very much less dense than the shadow thrown by the catheter itself (Figs. II. and V.). I have seen the fibres of the levator ani throw oblique, centrally converging linear shadows, but these again are unmistakable, and do not show when the prostate is much enlarged. In the female a similar shadow may be thrown by a cervical fibroid compressing the bladder.

Calculi are readily seen within the prostatic substance. If the swelling is seen to be smooth and regular in outline one would think of a benign enlargement of the prostate. If the upper surface is irregular in outline or the enlargement limited, especially to one lobe, one would think of a malignant condition, particularly so if there is infiltration beyond the normal boundaries.

Prostatic bar of obstruction of the glandular type (usually due to hypertrophy of the subcervical gland of Albarran) should be suspected if the symptoms are those of hypertrophied prostate, but no definite conical shadow is seen on the radiogram. There may be an indefinite blurring around the sphincter, but never the conical, sharp-edged shadow which is typical of the prostate. With a large fibrous bar of the trigone a well-marked shadow may be cast at the base, with a perfectly straight, horizontal, upper margin, running from side to side, and lying at a distance of ¼ in. to ½ in. above the lower margin, according to the depth of the bar.

The state of the bladder wall should be observed in all these cases. With a chronic retention of fairly long history as mentioned above, the upper border of the bladder will be seen above the ala of the sacrum, and the margin will be smooth and the wall thin. In a subacute obstruction, where the pathological process has been limited to muscular hypertrophy, the wall will be seen to be markedly thickened, and definite fasciculations can be seen (Fig. IV.). Should there be a diverticulum of the bladder, the margin is well shown, and also the cavity and neck. The presence of this can be confirmed by sodium iodide or lipiodol cystogram or by cystoscopy, if possible.

It is of interest to note the state of the bladder after prostatectomy. In these cases the shadow originally thrown by the prostate is no longer visible, and, furthermore, the actual bed of the prostate can be seen outside that area if the operation has been successful and there has been no recontraction of the vesical sphincter. The bladder is small. Its capacity may be half, or even less, of the original, showing that the obstruction has been relieved. Any tags of prostatic tissue or mucous membrane left behind, if big enough, can be seen quite clearly (Figs. III. and VI.).

It can confidently be stated that if the essentials above are observed, the exact state of the interior of the bladder is visualised. This has been confirmed time after time at operation. These essentials are: the use of a narrow rubber catheter sufficiently rigid to pass the contracture at the neck of the bladder; complete emptying of the bladder; introduction of sufficient air to just set up a positive pressure; correct angle of the X ray tube; and good preliminary clear-out of the bowel.

CONCLUSIONS

(1) Aerocystography is a valuable adjunct to all other methods of diagnosis of prostatic enlargement. (2) In addition, it tells us the state of the bladder. Diverticula and calculi are thrown into better contrast. (3) Where cystoscopy is impossible, it is the only method of visualising the intravesical enlargement. (4) The technique is simple, it is unassociated with any dangers beyond the ordinary ones of catherisation, and it gives valuable information. No anæsthetic is required.

I am indebted to Mr. T. H. Richmond and Mr. F. W. Duthie for permission to publish this work, which has been carried out in its entirety on cases under their care in the North Staffordshire Royal Infirmary, also for their kind advice and assistance; and to Dr. J. F. Bromley for his valued coöperation.

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SLIPPING OF THE EPIPHYSIS OF THE HEAD OF THE FEMUR

ITS RELATION TO RENAL RICKETS

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(WITH ILLUSTRATIONS ON SPECIAL PLATE)

The purpose of this paper is to show that renal rickets is the cause of a good proportion of the cases of slipping of the epiphysis of the femur, and arguments are deduced from the radiographic evidence against the more popular theory that trauma is the chief factor in its production. The importance of these findings is that operative measures designed to correct the deformity, heedless of the renal disease, may result in failure and may jeopardise the life of the patient.

Displacement of the epiphysis of the head of the femur usually results in the deformity known as adolescent or epiphyseal coxa vara. This condition is not uncommon—indeed, in young people between the ages of 12 and 21 years it has a frequency equal to that of tubercle of the hip-joint commencing at this period, and as the clinical signs of the two conditions are often indistinguishable, though the treatment and prognosis are so different, correct diagnosis is essential. In pre-radiographic days the lesion was discovered on a number of occasions only during or after resection of hip-joints which had been diagnosed as tuberculous. In a previous paper I have pointed out that by means of radiography it is now possible to differentiate between the various diseases and abnormalities of the hip-joint. In the series there described 26 cases of slipped epiphysis of the femoral head were observed—18 in males and 8 in females. Of the 18 males the slipping was on the left side in 13, in the right hip in 4, and in the other the epiphysis of both femurs had slipped. In one case, though definite slipping had only taken place on one side, the metaphysis of the opposite side was widened and its borders irregular, suggesting a pre-slipping stage. Of the females it was on the right side in 5 and on the left in 3. The condition therefore appears to be commoner in the male on the left side.

Radiographic Appearances

The radiographic appearances of the slipped epiphysis of the head of the femur are characteristic (Fig. I. on Plate). The epiphysis has a very clearly defined and regular metaphyseal periphery as if outlined by a pencil, its convex articular border being regular except for the fovea. It is in the form of a cap which appears to have slipped off the upper convex extremity of the neck of the femur, the margins of which are higher than the corresponding margins of the epiphysis, the deformity depending upon the degree of slipping. The pressure of the upper end of the neck against the "freed" crescentic epiphysis, which is applied to the articular surface of the acetabulum, tends to increase the displacement by causing the epiphysis to slip in the acetabulum downwards and backwards with some inward rotation. In cases with extreme displacement the upper end of the diaphysis comes into apposition with the superior border of the acetabulum, and the metaphyseal surface of the epiphysis is forced against the *inferior surface of the neck of the femur*. There is no irregularity of the bone trabeculæ or surfaces to suggest bone disease or injury. The joint space and the acetabulum appear to be unaltered. The convex upper margin of the diaphysis is usually not so clearly defined, and its outline appears to be woolly.

Though coxa vara is the usual deformity produced, Scheuermann has described and illustrated with radiograms a slipped epiphysis in which a coxa valga deformity resulted. Owing to the fact that patients who develop this deformity often complain of pain or discomfort in the region of the hip-joint for some weeks or even months before the actual slipping occurs, a radiographic examination is sometimes made and will often show the pre-slipping condition. This is important, for it will suggest treatment designed to prevent the slipping, and any investigation and treatment which will do this should be rigorously pursued because radiograms show that, once the epiphysis has slipped, the best result possible will be complete reduction with premature fusion and stunted development resulting in some degree of shortening. (Mr. S. T. Irwin has described the best result I have seen: only ¼ inch of shortening without any arthritic changes.) On the other hand, in spite of complete reduction, the epiphysis may undergo degenerative changes and result in a very disabling deformity for the patient. Incomplete reduction results in a joint prone to very early chronic arthritic changes with consequent disablement.

The radiographic features of this pre-slipping stage should therefore be sought in children suffering from discomfort or pain in the hip-joint. The clinical features may suggest early tuberculosis, but the radiogram shows bone of normal density and a regular outline of the borders of the epiphysis and diaphysis, with no evidence of any erosion or destruction of the bone lamellæ, which on repeated examination will rule out tuberculosis. All that is shown is some increase in the density of the metaphyseal periphery of the epiphysis—the "pencil lining" already described—some increase in the thickness of the metaphysis in part or throughout its whole breadth, with some woolliness of the outline of the extremity of the diaphysis (Fig. I., right side). I have one case of slipped epiphysis in which the radiograms show fragmentation with splaying out of the roof of the acetabulum (resembling Perthes's disease of the femoral epiphysis), which later radiograms show to have consolidated. This is a rare finding in these cases.

Ætiology

Numerous investigations of the cause of this condition have been made. The opinions of the investigators can be grouped under three headings: (1) disease, (2) weight-bearing and strain, (3) trauma. Personally I hold that each of these factors comes into operation to some degree; there is some disorganisation of the metaphysis which lessens its capacity to withstand the normal shearing stresses and strains, and the condition may be brought sooner into prominence by some trauma which would not have affected the normal femur.

DISEASE

Acute pyogenic infection of the hip-joint very commonly destroys the metaphyseal tissue and results in the separation of the epiphysis as a sequestrum. Lindemann has reported a case occurring in a child of 12 who was a congenital syphilitic, suggesting that the metaphysis was disorganised by the syphilitic process. Froelich, Platt, and others consider that the separation is brought about by a low grade of sepsis.

Localised osteochondritis and disturbances of endocrines, as instanced in the adiposo-genitalis type of dystrophy, have been put forward as the causative factor. Schwartz stated as his opinion that separation of the normal epiphysis was not possible, and that it was due to some unknown disease of the cartilage.

Many observers, notably Block, Fiorani, Frösch, Hofmeister, Haedke, Müller, and Peltesohn, have suggested rickets as the causative factor, though many others have strongly opposed this theory. Key, who has published the results of an extensive investigation of the published cases, as well as the findings in a number of cases which he has examined, states: "The only abnormality thus far detected is a slight broadening of the cartilage of the epiphyseal line. At this period some change occurs in the region of the epiphyseal line which causes a weakening of the structures which bind the head to the neck of the femur. The nature of this change is unknown, as no such case has ever been studied pathologically," and later: "It is further to be noted that in frankly rachitic children I have never seen a case of separation of any epiphysis, nor have I been able to find a single such case in the literature."

Do not the following facts concerning renal rickets supply this deficiency?

RENAL RICKETS

The histories of the following cases of renal rickets, together with the radiograms, undoubtedly place this as a very definite cause of this lesion.

In the paper already mentioned I said that "slipped epiphysis appears to be due to some disintegration of the metaphysis rather than direct trauma, as most of the patients with this condition give no history of trauma and the radiographic appearances do not support the trauma theory." Since this was written a patient, a boy aged 16, was sent to me for X ray examination of the hip-joints (Case 1). The radiogram of the hip-joints (Fig. I. on Plate) showed that the epiphysis of the one side had slipped and the metaphysis on the other was thickened—the pre-slipping stage. I obtained the history that one year previously the patient had had an osteotomy of the lower end of the femur for the correction of knock-knee, so I made radiograms of both knees to see if they would throw any light on the pathology. These showed (Fig. II. on Plate) a definite thickening of the metaphyseal area of the upper end of the left fibula but no such change in the metaphyses of the lower ends of the femurs or upper ends of the tibia or the right fibula. From these appearances I suggested the diagnosis of renal rickets, which was confirmed later by the characteristic appearances of renal rickets in the epiphysis of the radius and ulna. The urine was shown later to contain a large amount of albumin. No suggestion of renal disease had been previously suggested.

More recently another patient (Case 2) was sent for radiography of the knee-joints. These radiograms showed that the lower epiphyses of both femurs had a slight degree of slipping, while the metaphyses of the upper ends showed the appearance which I have described as the pre-slipping condition. I again suggested that the condition was that of renal rickets and urine examination revealed much albumin. Radiograms of the upper and lower ends of the tibia, fibula, radius and ulna and upper ends of the humerus showed a similar thickening of the metaphyseal area. Yet radiograms of these same areas only one month after showed a most remarkable improvement; the metaphyses appeared to be almost normal. The radiograms of the long bones in these cases do not show the characteristic appearances seen in the radiograms of frank rickets. There is no suggestion of bowing of the long bones or bending of the neck of the femur; except in the immediate neighbourhood of the metaphyses, the bones appear to be normal in density, and in the last radiograms of Case 2 little indication of the past, though recent, metaphyseal disturbance is to be detected. Parsons and Teall have described and illustrated a case of atrophic rickets with a four years' interval between the radiograms, showing complete disappearance of the signs of active rickets, though the bones appear in the healed condition to be rarefied, and they have pointed out that "the changes do not occur to the same degree in all the long bones—e.g., the radius and ulna of one arm may show changes much more marked than in those of the other side."

This observation is confirmed by Figs. I. and II., and proves that it is possible for renal rickets to cause a disintegration of the metaphyses of the upper end of one femur with resulting slipping without there being any further radiographic evidence of renal rickets.

In the type of renal rickets which Parsons and Teall describe as "woolly" the bones are generally softened and bend with pressure as in osteomalacia, which would appear to spare the epiphysis from separation. Fig. III. (on Plate) is a radiogram of the pelvis of a youth aged 21 (Case 3) with renal disease which has resulted in this "woolly" type of rickets. The pelvis has become triradiate. The epiphyses of the femoral heads show the sclerosed margin and the thickened metaphyses, but instead of the epiphysis slipping bilateral coxa vara deformity has resulted from marked bending of the necks of the femurs. Owing to the gravity of his renal disease he cannot stand, consequently the femoral metaphyses are not subjected to the strain of the erect position which the less disabled patient is allowed to endure.

The radiographic evidence of these cases of renal rickets proves therefore that this condition can induce slipping of the epiphysis of the head of the femur and even of other epiphyses. The rapid disappearance of the active rachitic changes at the metaphysis, as illustrated in Case 2, in which one month after marked changes were shown on the radiograms, the metaphysis was almost indistinguishable from the normal, would account for the objections of many observers who have stated that the bones showed no evidence of rickets. I have examined the urine of two further cases of slipped epiphyses which have united and found much albumin, though the bones do not show the changes I have described. Haswell Wilson reported that the metaphyseal tissue in a case of renal rickets, cited by Parsons, was indistinguishable from florid rickets, and microscopical examinations of the metaphyseal tissue of the hip-joints excised by Kocher, Frangenheim, and Haedke revealed alteration in the cartilage and the presence of osteoid tissue.

I am convinced, therefore, that renal rickets can be a definite cause of slipping of the epiphysis of the head of the femur. Lindemann has shown that this can also occur as a result of congenital syphilis in the radiograms of the joints of which we see somewhat similar changes in the metaphyseal regions. There are probably other excretory or secretory disturbances which produce this metaphyseal disorganisation which we should endeavour to determine.

STATIC CAUSES

It has been suggested that the condition can be induced by strain due to long-continued standing or by the superincumbent weight of the trunk, particularly in the obese patient, or by the increased strain thrown on one hip because of disease or deformity of the opposite hip. It has been suggested that this weight or strain led to the bending of softened rachitic bone of the neck of the femur which ultimately led to separation of the epiphysis. This is not supported by radiography. The femoral epiphyses which have slipped appear to be always associated with femoral necks which show no evidence of bending. I have a number of cases in which the radiograms show extreme coxa vara deformity owing to bending of the neck of the femur due to rickets, but only one of these show the slightest evidence of displacement of the epiphysis. This exceptional finding I believe to be due to an osteotomy which placed strain on a metaphysis in an active phase of rickets. The radiograms of the patient (Case 4), a girl of 6, showed a triradiate pelvis with marked bowing of the neck of the femur on both sides. A bilateral osteotomy of the upper third of the femur was performed. Radiograms taken six years after showed that the epiphysis of the left femur had slipped. In the radiograms of the long-standing case of renal rickets (Case 3), though the metaphyses show marked degenerative changes, no slipping is shown but marked bending of the neck of the femur. That the shearing strain on the metaphysis due to the superincumbent weight and muscle pull causes the displacement of the epiphysis I have little doubt, but it only happens after the metaphysis has been disorganised—it could never happen with a normal metaphysis.

TRAUMA

The first case of displaced epiphysis of the head of the femur was discovered by Brousseau in 1867 at the autopsy on a boy, aged 15, who had received his fatal injury when a vehicle passed over his hip-joint. But Rammstedt was unable to produce simple separation of the epiphysis experimentally.

Elmslie, Rammstedt, and others have suggested that trauma loosens the head epiphysis and that it gradually slips afterwards. Radiographically there is nothing to support the traumatic theory except that trauma insufficient to cause any displacement of the normal epiphysis may result in the displacement of an epiphysis with a disorganised metaphysis.

I have never seen a simple separation of the epiphysis of the head of the femur when a child has been brought for radiography because of a recent severe injury to the region of the hip, though I have seen a number of fractures in the neighbourhood of the metaphysis in such patients. On the other hand, one readily receives information as to past injuries if a child is brought complaining of pain or discomfort in the hip-joint, though there is no bruising or other clinical evidence of such an injury. If trauma is alone responsible, one would expect to see separation of the epiphysis after manipulative procedures to reduce congenital dislocations. Radiograms show that the trauma in such procedures is often sufficient to result in fragmentation of the epiphysis or even fracture of the neck or shaft of the femur, but I have never seen a simple separation of the epiphysis either immediately after, or with a long interval, which might be expected to happen if the epiphysis had only been loosened.

Radiograms also show that when an epiphysis has been displaced by trauma, portions of the metaphysis are also displaced with it—i.e., it is not a clean separation through the metaphysis as we see in slipped epiphysis. Bilateral slipped epiphysis is not a very uncommon finding. Hofmeister reports that one-third of his cases were bilateral. While a patient is receiving treatment for one slipped epiphysis separation of the opposite femoral epiphysis may occur. I have only one example of a bilateral fracture of the neck of the femur in an adolescent—it is a very rare occurrence; in this case, as in all the other fractures of the neck of the femur, there is no suggestion of a simple separation through the metaphysis. Many of the patients with this displacement have complained of pain or discomfort in the affected hip-joint for weeks or months before the trauma occurred. This pain or discomfort has been often brought on by fatigue and relieved by rest, which in itself suggests the hip-joint was not normal, and, as previously stated, it is rare to find bruising or evidence of recent severe trauma when the radiogram shows a simple epiphyseal separation.

Conclusions

(1) Slipping of the epiphysis of the head of the femur in adolescents is due to disorganisation of the metaphyseal tissue which destroys its capacity to withstand the static strains or the trauma to which the normal joint is subjected without harm.

(2) Renal rickets is the cause of this disorganisation of the metaphysis in some cases, and should be excluded before any operative measures are adopted.

(3) The radiographic picture of renal rickets is almost diagnostic; the changes may only be seen in one joint.

(4) Consolidation and repair of the metaphyseal tissue in renal rickets may be seen by radiographic examination to take place in as short a time as one month.

(5) The urine of all patients showing slipped epiphysis should be examined on several occasions for albumin. The radiographic appearance of the bones in renal rickets is to some extent an index of the renal condition.

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FACIAL PALSY AND INFECTION WITH ZOSTER VIRUS

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IN 1907 Ramsay Hunt[1] wrote his classical paper on Herpetic Inflammations of the Geniculate Ganglion, in which he drew attention to the occurrence of herpetic eruptions in or near the external auditory meatus along with facial palsy, and sometimes with lesions of the eighth cranial nerve; and he brought evidence to show that the seventh nerve has a somewhat rudimentary sensory supply, overlapping that of adjacent nerves, to the tympanic membrane, the external auditory meatus, and the adjacent parts of the concha. Since then his syndrome has been generally recognised, and his explanation of it as a specific zoster infection of the geniculate ganglion is widely accepted. The extent of the zoster eruption varies a great deal, and the extent of the cutaneous supply of the seventh may also be presumed to vary; the question therefore arises whether any cases of this condition occur in which, owing to smallness of the cutaneous supply or for some other reason, the eruption is missing. If so, they would appear clinically, if the eighth nerve is not involved, as cases of ordinary Bell's palsy. Antoni[2] raised this question in 1919, but so long as the only known diagnostic characteristic of zoster was its eruption, it could not be answered. Recent serological work, however, has provided a new method of approach.

Although zoster is always included among the diseases due to filtrable viruses, direct evidence in support of this has not yet been produced. It is inferred from the failure of all efforts to find a cultivable bacterium in the fluid of early vesicles, and from the presence of nuclear inclusions, similar to those produced by the virus of herpes febrilis, in the epidermal cells of the lesions. In addition, Kundratitz[3] claims that, in a high percentage of susceptible children, zoster vesicle fluid inoculated into the skin produces a vesicular lesion, followed occasionally by a generalised eruption of a similar nature; more rarely the generalised vesicular eruption occurs without any preceding local lesion. Bruusgaard[4] has confirmed Kundratitz's findings. Netter[5] and his colleagues have produced evidence that the serum of zoster convalescents contains a specific antibody whose presence can be detected by the complement-fixation reaction, using as antigen diluted zoster vesicle fluid, or a suspension of crusts from zoster skin lesions. Lauda and Silberstern[6] failed to confirm this, but the observations of Bedson and Bland,[7] though limited to a small series, support Netter's claim, and in a series of 82 convalescent zoster patients shortly to be reported by one of us (R. T. B.) positive complement-fixation reactions were found in 80.

Zoster may therefore be regarded as an infection with a specific virus, which leaves evidence of itself, after the illness has passed, in the form of antibodies in the serum, and if any cases of Bell's palsy are due to this virus the complement-fixation reaction should reveal evidence of this.

We have carried out this reaction with sera of a number of such cases, using essentially the technique described by Bedson and Bland.[7] The specific antigen was a 1 in 20 dilution of vesicular fluid from early zoster lesions in M/50 phosphate buffer solution at pH 7·6. We also tried antigen prepared from the scabs of older lesions (Netter) but found them strongly anticomplementary and much less satisfactory than the diluted vesicular fluid. The antigenic potency of the latter varies considerably; hence, although Netter worked with a 1 in 100 dilution, and in one of our own cases a 1 in 160 dilution was found effective, we preferred to adopt a 1 in 20 dilution for routine use. The control antigen was a bullous fluid from the lesions of a patient with dermatitis herpetiformis, similarly diluted. Antigens were usually bacteriologically sterile, in which case, when stored in a refrigerator, they kept their antigenic properties for some months. The diluted antigens were tested for anticomplementary action in the presence of 1 M.H.D. (minimum hæmolytic dose) of complement on the day of the test. Occasional samples proved to be anticomplementary but it was found that heating for ten minutes at 56° C. removed this property. The sera were used undiluted after having been inactivated by heating for 20 minutes at 56° C.

In each series of tests 0·1 c.cm. of the serum under investigation, 0·1 c.cm. of antigen, and 0·1 c.cm. complement (containing 2 M.H.D.) were mixed in that order, and the volume made up to 0·8 c.cm. with saline. After the mixture had stood two to three hours at room temperature, 0·2 c.cm. of sensitised sheep red cells was added, and the whole incubated at 37° C. for 30 minutes. The degree of hæmolysis was read immediately, and again after 24 hours in the refrigerator. With each group of sera the following controls were put up and treated in the same manner: at least one serum from a patient convalescent from ordinary zoster; at least one serum from a normal person or a patient who had not recently suffered from either zoster or chicken-pox; antigen and complement; antigen without complement; serum without complement; complement alone.

The cases fall into two clinical groups.

CASES WITH CUTANEOUS ERUPTIONS

Group I.—Eight cases of Bell's palsy with clinical evidence of cutaneous eruptions in the neighbourhood of the ear and one case with an eruption on the tongue. Their clinical features were briefly as follows:—

CASE 1.—A woman, aged 41, complained for two or three days of severe pain round the left ear, radiating down the neck and over the temple. Then a few "water blisters" appeared behind the ear and on the pinna, and others on the left upper arm, the left temple, and just inside the hair line on the left side of the head. She felt soreness inside the left external auditory meatus but there was no aural discharge. Severe pain persisted for 15 days, became worse on the sixteenth day, and on the seventeenth she woke with a complete left facial palsy. On examination the following day, slight œdema and marked tenderness were found over the mastoid process; small scabbed areas were present on the pinna and behind the ear; the drum was normal but a small vesicle was seen close to it on the posterior meatal wall. The œdema persisted for a week, and the pain, gradually diminishing, for a few days longer. The facial nerve recovered its function in about four weeks. Serum obtained seven weeks after the onset of the paralysis gave a positive zoster complement fixation.

CASE 2.—A man, aged 59, who had never had shingles and could not remember chicken-pox, complained for seven days of moderately severe aching pain extending from behind the left eye to below the left ear. Then he had a sore-throat, and two days later a left facial palsy appeared. About the same time a vesicular rash was observed, chiefly behind and below the left ear and in the concha, with outlying single vesicles above and in front of the ear, on the bridge of the nose, and above the left eyebrow. There was a slight discharge from the left ear, impairment of hearing on that side, and slight impairment of taste on the left side of the tongue. Serum obtained 12 days after the onset of the paralysis gave a positive zoster complement fixation. The eruption healed, but the face recovered only very slowly, being still weak 14 months later.

CASE 3.—A man, aged 57, suffering from tabes dorsalis, with positive Wassermann reaction in blood and cerebrospinal fluid, complained one day of slight discomfort in the right external auditory meatus, and was found to have a right facial palsy. Two days later a crop of vesicles appeared round the external auditory meatus, and one vesicle just below and behind the lobule of the ear. There was loss of taste on the right side of the tongue. Serum obtained 20 days after the onset of the paralysis gave a positive zoster complement fixation. Five days after his eruption appeared, a nurse on duty in the ward where he was a patient developed a patch of herpetic vesicles over the sacrum, preceded by pain for one day; 11 days after this a boy, aged 8, a patient in the same ward, developed chicken-pox.

CASE 4.—A girl, aged 13, who had chicken-pox in infancy, but never shingles, complained of left-sided earache for about a week. She became ill, with vomiting, abdominal pain, and generalised headache, but with a reputedly normal temperature. Then her mother noticed several blisters containing watery fluid in the concha of her left ear. Three days later left facial paralysis occurred, after which the general condition gradually improved, though when she first got up she complained of giddiness and stumbling. Serum obtained 17 days after the onset of the paralysis gave a positive zoster complement fixation. Recovery was complete in about six weeks.

CASE 5.—A woman, aged 60, who had never had chicken-pox or shingles, complained of severe pain over the right ear and down the right side of the neck for one day, and then noticed right-sided facial paralysis. Shortly afterwards she felt, but did not see, a "pimple" in the floor of the entrance to the right external auditory meatus; it dried up, and a "scurfy patch came off." On examination four weeks later, an almost complete right facial paralysis was still present, but the ear appeared normal. Serum obtained then gave a partially positive zoster complement fixation. The pain lasted, with diminishing intensity, for about a fortnight.

CASE 6.—A man, aged 36, who had never had chicken-pox or shingles, woke one morning to find his right face paralysed and saliva dribbling from his mouth. Five days later he had a little transient pain below the right ear. Examination ten days after the onset showed an almost complete right facial paralysis without disturbance of taste, and a scaly, partly scabbed eruption in the concha of the right ear at the entrance to the meatus, on an area of raised red cracked skin. There was debris in the meatus; no actual vesicles were seen. The patient had first noticed this condition two days previously. Serum obtained ten days after the onset of the paralysis gave a positive zoster complement fixation. Recovery took about a month. He had had right-sided otorrhœa in childhood, with subsequent slight deafness.

CASE 7.—A man, aged 26, had complained for six months of "headache" in the right mastoid region, and for five years had had slight bilateral aural discharge. He had never had shingles and could not remember chicken-pox. He developed a cold, with a cough, and noticed a "queer taste" on the right side of his tongue. Five days later his right face became paralysed. Six days after that, examination showed a complete right facial paralysis, with no impairment of taste, and a slight scabbing on the posterior wall of the entrance to the right external auditory meatus. The drums showed signs of old chronic otitis media, without recent activity. Serum obtained nine days after the onset of the paralysis gave a positive zoster complement fixation. Recovery took about four weeks.

CASE 8.—A girl, aged 15, who had had chicken-pox in early childhood, but never shingles, had a little left-sided earache, and her mother noticed what she described as one or two "purulent spots" in the left external auditory meatus. Seven days later left facial paralysis appeared, and was almost complete when she was examined after a further interval of three weeks. She had no severe pain, and taste was unimpaired. Serum obtained then gave a positive zoster complement fixation.

CASE 9.—A girl, aged 13, who had had chicken-pox as a baby, but never shingles, developed a "cold," and complained for three or four days of a nagging pain over the tip of the right mastoid. Then the right side of the face suddenly became paralysed, and she noticed impairment of taste on the right side of the tongue. On examination four days after the paralysis, two yellow pin-head vesicles, very close together, surrounded by a red area, were seen at the tip of the tongue on the right side; serum obtained at the same time gave a positive zoster complement fixation. The vesicles disappeared in a few days; the paralysis persisted for at least two months, after which she was lost sight of.

These nine cases had cutaneous eruptions in the area of supply of the geniculate ganglion, which varied from obvious zoster vesicles to small areas of scabbing which, at the time of examination, could not clinically have been diagnosed with certainty as zoster, but which were suggestive of it. All of them gave positive zoster complement-fixation reactions (Table I.) in their serum, and in all it seems reasonable to attribute the facial palsy to an infection of the geniculate ganglion with zoster virus. More or less pain was associated with the onset in six of them, absent in three. In four recovery of muscular power took place in a few weeks; in one it was incomplete after 14 months; in the others its date was not ascertained. In four there was evidence of impairment of taste; in two taste was unimpaired;

in three there is no definite information. In general, therefore, the clinical features of the facial paralysis itself do not differ from those of the familiar Bell's palsy of unascertained origin.

TABLE I

Sera.	Antigens.		Saline.	Sera.	Antigens.		Saline.
	Zoster vesicle fluid.	Derm. herp. vesicle fluid.			Zoster vesicle fluid.	Derm. herp. vesicle fluid.	
Case.	+ 2 M.H.D. complement.			Case.	+ 2 M.H.D. complement.		
1	+ + + + + + + ±	± −	− −	6	+ + + + + + + +	+ + −	± −
2	+ + + +	−	−	7	+ + + + + + + ±	− −	− −
3	+ + + + + + + +	+ + + −	− −	8	+ + + + + + ±	− −	− −
4 *	+ + + +	+ + + +	−	9	+ + + + + +	− −	− −
5	+ + + + + + +	− −	− −				

Derm. herp. = Dermatitis herpetiformis.

The degree of fixation of complement (2 M.H.D.) is indicated by the signs, + + + + representing complete fixation. Where two rows of signs are given, the upper is the reading after 30 minutes at 37°, and the lower is the reading after 24 hours at 0° C. (approx.). The other controls not shown in the Table were uniformly negative.

* In this case the control antigen was strongly anticomplementary, but complete fixation with zoster was also given when 3 M.H.D. and 5 M.H.D. of complement were used; the result has therefore been regarded as positive.

CASES WITHOUT CUTANEOUS ERUPTION

Group II.—Twenty-two cases of facial palsy with no clinical evidence of cutaneous eruption in the neighbourhood of the ear. These were of the familiar clinical type and need not all be recorded in detail. Eruptions of the kind found in the first group were absent, with two doubtful exceptions; in one of these a pustule (not a blister) occurred behind the ear and a "sore place with a whitish centre" on the tongue, two days before the paralysis; in the other the patient noticed one or two small blisters on the outer part of his forehead a week after the occurrence of the paralysis. Fourteen of the patients were women, eight men, and their ages varied from 13 to 60. Ten had associated pain, usually in the ear or mastoid region, sometimes in the neck or along the lower jaw; seven gave definite evidence of disturbance of taste. In 14 recovery was known to have occurred within two months; in three, very little improvement could be detected after two months, but two of these recovered in six months; in the rest information is lacking.

In 18 of these cases (including the two with doubtful eruptions) serum obtained between 9 and 30 days after the appearance of the paralysis gave no zoster complement fixation, and infection with zoster virus would therefore seem to be an unlikely cause of the paralysis.

In the remaining four positive zoster complement fixations were obtained. The clinical details are as follows:—

CASE 10.—A young man, aged 19, who had never had shingles and could not remember chicken-pox, developed a left facial paralysis without pain or other symptom. It had improved considerably by the time he was examined, seven days later, and disappeared in a month. Taste was not affected. A partially positive complement fixation was obtained in serum taken two months after the onset.

CASE 11.—A woman, aged 44, who had never had chicken-pox or shingles, complained of slight bilateral earache for three days, and then developed right facial paralysis. Syringing the ears removed much wax, chiefly from the left. Aching persisted in the right ear, spreading down the neck, for several days longer. Taste was impaired on the right side of the tongue. Serum obtained four days after the onset of the paralysis gave a positive zoster complement fixation. Recovery was gradual.

CASE 12.—A woman, aged 47, who had had chicken-pox in childhood, but never shingles, after two days' severe headache (not earache) of a kind from which she often suffered, developed a right facial paralysis, with a slight sore-throat. Taste was not affected. Serum obtained 15 days later gave a partially positive zoster complement fixation. Recovery took two months.

CASE 13.—A woman, aged 56, who had never had chicken-pox or shingles, suddenly developed a complete left facial paralysis, with some subsequent aching in front of the ear. Taste was unimpaired. Serum obtained 21 days later gave a positive zoster complement fixation. Recovery had not begun in two months.

Clinically, these four cases differ in no characteristic way from the rest of the group. The positive zoster complement fixations (see Table II.) strongly suggest a zoster infection as the cause of the paralysis. There was no history and no sign of any skin eruption in, on, or near the ear, nor of an eruption on the tongue, but the possibility of an eruption confined to the deeper parts of the external auditory meatus was not excluded.

TABLE II

Sera.	Antigens.		Saline.
	Zoster vesicle fluid.	Derm. herp. vesicle fluid.	
Case.	+ 2 M.H.D. complement.		
10	+ + + + +	− −	− −
11	+ + + + + + + +	− −	− −
12	+ + + ± + + ±	− −	− −
13	+ + + + + + + ±	− −	− −

For explanation of the signs see Table I.

The 22 cases of this whole group were random cases of Bell's palsy, without cutaneous eruption suggestive of zoster. The serological investigation shows that zoster virus is a possible or probable causative agent in a relatively small proportion of such cases. That proportion is approximately 18 per cent. in this short series, but we have excluded from it 14 other negative cases, otherwise admissible, for the reason that their sera were examined between three and nine days after the appearance of the palsy; antibodies may develop within that period, but their absence in a given case cannot be considered reasonably certain unless the examination is made after the ninth day. We feel, therefore, that a longer series of cases might possibly show an incidence of zoster infection lower than 18 per cent., rather than higher.

Many of the cases in Group I., with cutaneous eruptions, were specially referred to us (Nos. 1 and 3 from Maida Vale Hospital by Dr. Blake Pritchard, to whom we are much indebted); hence the percentage of cases presenting the Ramsay Hunt syndrome in our series has therefore no bearing on the true incidence of such cases in an unselected group of patients with Bell's palsy.

SUMMARY

1. The sera of nine cases of Bell's palsy with zoster-like eruptions in the areas of sensory supply of the geniculate ganglion have been found to contain antibodies to zoster virus, demonstrable by complement

fixation. This is serological evidence supporting Ramsay Hunt's clinical explanation of such cases as due to specific zoster infection of the geniculate ganglion.

2. The sera of 22 cases of Bell's palsy without zoster-like eruptions have been found to contain zoster antibodies in only four instances. Our evidence thus suggests that the majority of such cases are not due to an infection with zoster virus.

We wish to acknowledge with gratitude a great deal of help and advice given us by Dr. S. P. Bedson, of the Freedom Research Laboratory in the London Hospital. One of us (R. T. B.) was assisted by a grant from the Yarrow Research Funds.

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Clinical and Laboratory Notes

A STAINING METHOD FOR THE DIRECT TYPING OF PNEUMOCOCCI

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AN important advance in the serum treatment of lobar pneumonia was made when Armstrong[1, 2] and Logan and Smeall[3] in simultaneous papers showed that the direct typing of pneumococci in sputum was possible. However it is not always easy, at least for the unpractised eye, to recognise the unstained swollen capsules on which their method depends.

The object of the present communication is to point out that the "neutralised" capsule can be stained by ordinary dyes. The following technique is simple and reasonably quick.

Three or four loopfuls of Type I. serum are mixed on a slide with a fair-sized loopful of sputum and mounted with a cover-glass. The edges of the cover-glass are sealed with vaseline, so that it will not become stuck to the slide. Similar preparations are made with Types II. and III. sera. It is essential that complete neutralisation of the capsule should be obtained, and to ensure this the preparations should be left for 20 to 30 minutes. After this the cover-slips are slid off and discarded. The films left on the slides are allowed to dry and the bulk of the vaseline is scraped off with a knife. The vaseline remaining will not interfere with the staining and blotting of the slides, and it may finally be removed by warming until it is just melted and washing over with xylol. Before staining wash the film under the tap to remove the serum, stain for 2 to 3 minutes with dilute carbol fuchsin, wash and counter-stain for 10 seconds with carbol thionin; wash and blot dry.

It will be found that the bodies of all bacteria stain practically black, and that everything else is red. The capsules of pneumococci treated with the homologous serum appear quite large and stain a strong red, whereas the "unneutralised" capsule does not stain.

The dilute carbol fuchsin used has been filtered Ziehl-Neelsen stain freshly diluted in a test-tube with five or six parts of water. The carbol thionin contains nine parts 5 per cent. phenol in water and one part 50 per cent. alcohol saturated with thionin. In a new bottle this stain usually precipitates, but once the bottle is lined with deposit it lasts well. Saffranin may be used in place of carbol fuchsin, but the capsules are then less intensely stained. Tap-water may be used for washing slides throughout.

Similar methods are very successful in typing the pneumococci in pus, but in this case a few cocci may be seen with lightly stained capsules in mixtures with the heterologous sera. This is probably due to the fact that the patient has had time to produce some antibodies, but it does not appear likely to cause confusion.

When pneumococci cannot be found in sputum and mouse inoculation is inconvenient, a serum agar slope may be inoculated with a good loopful of sputum and the culture washed off in a little saline next day. The presence of a few pneumococci may be gauged by making a film from a loopful of the suspension mixed with a loopful of normal serum, and staining with carbol thionin or other stain capable of fixing the serum. Capsules will show as an unstained halo round the cocci. Unstained zones can, of course, occur in such a film round other bacteria owing to retraction, but a very little experience will enable the pneumococci to be identified. If they are present, equal volumes of suspension and of the type sera may be mixed and sealed in capillary pipettes. Films are made after about 15 minutes, washed and stained as for sputum. Capsules from cultures are considerably narrower than those from sputum or pus but are quite recognisable. It must, of course, be recognised that such a method is inferior to mouse inoculation, both in disclosing the presence of very small numbers of cocci and also in providing no test of virulence.

Where large numbers of pneumococci are present, as in pure cultures or in the peritoneal exudate of mice, it is only necessary to spread films of the organisms in loopfuls of the type sera and stain with carbol thionin. With homologous serum massive agglutination takes place, usually visible to the naked eye.

Capsular staining, although unmistakably present in the agglutinated cocci, is usually less striking than in sputum owing to incomplete "neutralisation" and insufficient antibody, but the agglutination alone will readily identify the type. This latter reaction has been previously described by Sabin,[4] who obtained no capsule staining.

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MYELOID LEUKÆMIA TREATED WITH THE FOUR-GRAMME RADIUM BOMB

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THE treatment of leukæmia by radiation is now firmly established. No case is cured; it is open to question whether life is prolonged at all. The superiority of radiotherapy over all other forms of treatment is that it can produce in these patients a temporary return to apparent health.

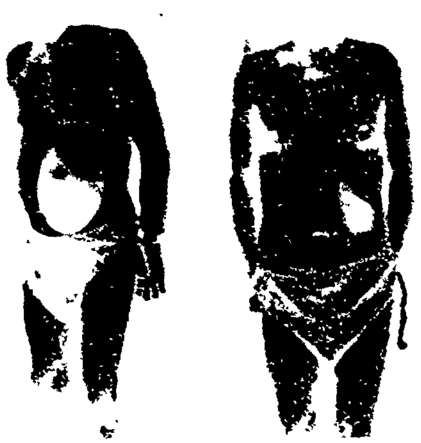
The cause of this condition is unknown, although several theories of its origin have been advanced from time to time. At the moment the balance of opinion seems to be divided between an inflammatory condition of the hæmopoietic system and a neoplastic one. Very little is known of the way in which X rays or the gamma rays of radium produce their biological effects. The treatment of a case of leukæmia by radiation therapy is, therefore, so far entirely empirical.

The case described here is one of myeloid leukæmia treated with a mass of 4 g. of radium. The spleen was the only part of the hæmopoietic system treated, and the reduction in the size of the spleen and in the number of the white blood corpuscles was taken as a guide to the response of the condition to treatment.

CASE RECORD

History.—The patient, a man aged 60, gave a history of having had "rheumatism" for several years, and a *B. coli* infection of the urinary tract in 1927. In June, 1929, he had had sciatica on the right side, treated by injection without relief. His teeth had been examined but were not extracted. In March, 1930, he consulted a doctor in Nice on the grounds of failing general health. Medical examination revealed a greatly enlarged spleen, and a blood count at the time showed the following :—

FIG. 1 FIG. 2



Photographs showing reduction in size of spleen after a week's treatment.

Red cells	3,286,000	Polymorph (neutro.)	69%
White cells	195,000	„ (eosino.)	8%
Hæmoglobin	90%	„ (baso.)	2%
Colour-index	1·3	Myelocytes (neutro.)	20%

He was advised to go to Paris for radiological treatment, but refused. In September, 1930, he was examined in England; the French findings were confirmed. At this time he complained of being easily tired, was constipated, had an indifferent appetite, and became short of breath on slight exertion. He was, however, well enough to play golf.

On examination in October, 1930, his general condition was good, the tongue clean, and the teeth showed slight sepsis. The chest was clear, the heart sound and the blood pressure 130/90. The spleen was very enlarged, extending inwards to the umbilicus and downwards to the iliac crest. The surface of the spleen was smooth and the notch easily palpable.

FIRST COURSE OF TREATMENT

On Oct. 16th, 1930, treatment of the spleen with a mass of 4 g. of radium was commenced. The radium consisted of 20 tubes of 200 mg. each, arranged in a horizontal circle; the radium-skin distance was 9 cm. The total filtration was equivalent to 1 mm. platinum, and the port of entry was a circle 15 cm. in diameter. The spleen was irradiated from the front and back, an exposure of two hours daily being given for seven days, giving in all a total dose of 56,000 mg. hours. Blood counts were done daily. The number of the white cells was reduced after seven days of treatment from 338,000 to 61,000, corresponding to a drop of over 30,000 white corpuscles per day. The white cells continued to decrease for some time after the cessation of treatment.

At the end of treatment the general condition was very definitely improved. The patient felt well, his breathlessness had cleared, and he was very markedly less easily tired. This improvement had occurred without any obvious improvement in either the red cell count or the hæmoglobin index. The reduction in the size of the spleen had been considerable, as is well shown in the photographs taken on Oct. 17th and on Oct. 25th, the day on which the patient left hospital (Figs. 1 and 2).

SECOND COURSE OF TREATMENT

Six months later, on May 5th, 1931, another blood count was done and this showed: hæmoglobin, 86 per cent.; colour-index, 0·6; red cells, 5,580,000; and white cells, 186,000.

Generally his condition was very good, and he was able to pursue his usual activities. The spleen had become enlarged to its previous size. Distance radiation with 4 g. of radium was again instituted, treatment being commenced on June 10th, 1931. The spleen was irradiated on this occasion from the front only, the same apparatus and a radium-skin distance of 9 cm. again being used. He received exposures of only one hour on each of the following days, June 10th, 12th, 15th, 22nd, and 24th, giving a total dose of 20,000 mg. hrs. The result was a very considerable drop in the white cell count.

During this period some interesting observations were made. On June 22nd leucocyte counts were done immediately before and after an hour's application of the bomb. The results are given below. A drop of just over 20,000 had been obtained after one hour's exposure. A repetition of this two days later indicated a similar reduction.

June 22nd

2.50 P.M.		3.50 P.M.	
White cells	92,000	White cells	66,000
Polymorphs—		Polymorphs—	
Neutrophil	72·5%	Neutrophil	61·5%
Eosinophil	1·0%	Eosinophil	1·0%
Basophil	5·0%	Basophil	9·0%
Myelocytes—		Myelocytes—	
Neutrophil	13·5%	Neutrophil	25·5%
		Eosinophil	2·5%
Lymphocytes	0·5%	Lymphocytes	0·5%

June 24th

2.50 P.M.		3.50 P.M.	
White cells	91,000	White cells	70,000
Polymorphs—		Polymorphs—	
Neutrophil	83%	Neutrophil	83%
Eosinophil	0·5%	Eosinophil	1%
Basophil	2·0%	Basophil	1%
Myelocytes—		Myelocytes—	
Neutrophil	12%	Neutrophil	13%
Lymphocytes	1·5%	Lymphocytes	2%

Radiation was stopped on June 24th, when the leucocytes had decreased from 170,000 to 91,000. The spleen had again been reduced in size, being now scarcely palpable. The drop in the leucocytes continued for some days after the treatment was stopped.

THIRD COURSE OF TREATMENT

The patient was seen again four months later, on Oct. 20th, 1931. The clinical picture was similar to that present at the commencement of treatment: shortness of breath on exertion, fatigue, and a greatly enlarged spleen. At this time, however, there was some deterioration in his general condition; he was obviously not as fit a man as he had hitherto been. He himself affirmed that he did not feel really worse, and was able to lead quite a normally useful life. A blood count taken at this time was as follows :—

Red cells	4,370,000	Polymorph (neutro.)	58%
White cells	257,000	„ (eosino.)	1%
Hæmoglobin	66%	Myelocytes (neutro.)	30%
Colour-index	0·7	Myeloblasts	10%
		Lymphocytes	1%

He was readmitted to Westminster Hospital Annexe on Nov. 11th, 1931, and distance radium radiation was commenced on the next day. Employing again the same apparatus at a radium-skin distance of 9 cm., exposures of one hour's duration were given daily to the spleen from the front, for a period of eight days, corresponding to a dose of 32,000 mg. hrs., followed later by four further treatments of one hour each at weekly intervals. After irradiation the leucocytes dropped to 35,000, and the drop continued after the end of treatment to 17,000 on Jan. 7th, 1932. There was also a very marked improvement in the red cell count and hæmoglobin, the red cells rising from 3,870,000 on Dec. 12th, 1931, to 6,120,000 on Jan. 7th, 1932. His general condition was good, and the spleen, previously much enlarged, was no longer palpable. Three weeks later, on Jan. 28th, his general condition was very good, and the spleen was still not palpable. A blood count at this time showed the total number of leucocytes to be 26,000.

On March 17th the patient was in excellent health. He looked well and felt well, and stated that he was able to play a considerable amount of golf with no discomfort. The spleen was still not palpable. A blood count done at the time, however, showed a leucocytic rise: hæmoglobin, 84 per cent.; red blood corpuscles, 5,000,000; white cells, 123,000.

When seen on March 30th he complained of fatigue and shortness of breath, and his general condition was again deteriorating. The spleen was just palpable and the leucocytic count was 123,000. The spleen was again irradiated with 4 g. of radium from the front. He was given an exposure of one hour daily for three days. The leucocytes on April 4th were 103,000, and on April 12th 105,000. The spleen, however, was not palpable. He was given three more hours' irradiation.

The patient returned to Australia in May, 1932. Owing to lack of radium, further radium treatment was not possible. On his return he received deep X ray therapy to the spleen, and his leucocytes dropped from 170,000 to 19,000 without undue shock. The patient stated that he was feeling better then than he had been for the last three years. In August, 1932, he apparently developed phlebitis in both legs, which was reported to be improving; also marked dental sepsis was being attended to.

The chief point of interest about this case is that the patient was treated, up to the time of his return to Australia, by means of distance mass radiation with 4 g. of radium. Cases treated by the surface application of radium have been described, but I have found no record of a case of splenomedullary leukæmia treated by a "bomb."

I wish to acknowledge my indebtedness to Mr. Stanford Cade for allowing me to publish this case.

THE OCCURRENCE OF GOUT DURING THE TREATMENT OF PERNICIOUS ANÆMIA

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THE following case is of interest in view of the fact that it has been shown by Riddle[1] that the level of the blood uric acid rises in pernicious anæmia 24 hours after treatment with liver extract has been commenced, and reaches a maximum just before the peak of the reticulocyte crisis.

Further, Spence,[2] in discussing the effects of treatment in 20 cases, stated that harm may result from taking too much liver after the stage of cure has been reached. He mentioned three instances in which patients had taken 1 lb. of liver daily for three months after the blood-cells had reached their normal level; two of these patients developed acute gout; the third, venous thrombosis with œdema of both legs.

I have not been able to find any other references to the development of gout in pernicious anæmia, although Davidson and Gulland[3] mention its occurrence.

CASE RECORD

A man, aged 49, was admitted to Mile End Hospital on May 4th, 1932. For several months before admission he had complained of shortness of breath and loss of weight. Three weeks previous to admission he had some dental extractions which aggravated the condition.

Previous history.—Gun-shot wound of the left arm and gassed during the war. No history of any serious illnesses.

Examination.—Moderate physique, but evidence of some loss of weight. There was general pallor of the mucous membranes with a lemon-yellow tint of the skin. Slight icterus was evident in the conjunctivæ. Heart: rate regular, not enlarged, no bruits, but sounds rather distant. Alimentary system: edentulous; tongue smooth, but no symptoms of glossitis; lower edge of liver just palpable; spleen not felt. Central nervous system: no abnormal physical signs detected.

A *fractional test-meal* showed achylia gastrica (no neutral red secreted). *Radiography* of the stomach and duodenum showed nothing abnormal. In the stools no occult blood was found.

A blood count gave the following results:—

Hæmoglobin ..	31%	Polymorphs	47%
Red cells	1,650,000	Small lymphocytes ..	32%
White cells ..	6,800	Large lymphocytes ..	17%
Colour-index ..	0·94	Hyalines	4%
Reticulocytes ..	6 per 1000 red cells.		

Red cells showed marked anisocytosis, poikilocytosis, polychromasia, and punctate basophilia. A few nucleated red cells were present. The cells appeared to be of a macrocytic type.

Subsequent progress.—The patient was given ventriculin, four doses daily (40 g.) for five days; the dose was then reduced to 30 g. daily. A marked reticulocyte response was obtained which began on the fourth day and reached its maximum on the sixth day, when the reticulocytes numbered 114 per 1000 red cells. The hæmoglobin rose slowly but steadily, and the red cells after a preliminary drop of 600,000 increased from 1,650,000 to 3,300,000 per c.mm. in 65 days. On the sixteenth day of treatment ½ lb. of liver was added to the diet.

On the thirty-sixth day after liver treatment had commenced he had an attack of gout which affected the metatarso-phalangeal joint of the left great toe and was characterised by pain, swelling, and redness of the joint, lasting three to four days, and then subsiding without leaving any evidence of the lesion. There was no previous history of gout nor any evidence of a gouty diathesis. The arteries appeared healthy and no tophi could be found. Estimations of the uric acid in the blood and urine were not made at this time. Two months after the attack of gout, however, the blood uric acid was found to be raised slightly to 5 mg. per 100 c.cm.

The patient continued to make good progress. The lemon-yellow colour of the skin disappeared, and the icterus of the conjunctivæ was lost. Liver treatment was discontinued on July 18th, having been taken for eight weeks, and Marmite, 6 g. daily, was then given in addition to 20 g. of ventriculin.

I am indebted to Dr. Alan Randle, medical superintendent of Mile End Hospital, for permission to publish this case.

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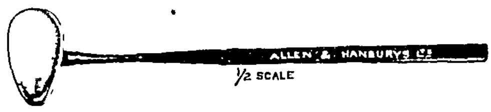
2. Spence, J. C.: THE LANCET, 1927, ii., 1026.
3. Davidson, S., and Gulland, G. L.: Pernicious Anæmia, London, 1930, pp. 226 and 243.

NEW INVENTIONS

A POCKET PERCUSSOR

THE neat percussor shown in the illustration can be carried in the waistcoat pocket. It measures exactly 5 in. long and has a nickel plated metal acorn-shaped head 1 in. long by ½ in. broad at its middle. One end of the acorn is rather more rounded than the other. The handle is of whalebone with tapering butt. Although light, the weight of the head alone is sufficient in use. Most percussors are too large and clumsy and not readily available when most needed. Their large size and rubber attachments rather invite roughness in use.



The instrument is made by Messrs. Allen and Hanburys, Bethnal Green, London, E.

S. WATSON SMITH, M.D., F.R.C.P. Edin.

REVIEWS AND NOTICES OF BOOKS

A System of Surgery

Third edition. Edited by C. C. CHOYCE, C.M.G., C.B.E., B.Sc., M.D., F.R.C.S., *Professor of Surgery, University of London, Surgeon to University College Hospital.* Pathological Editor: J. MARTIN BEATTIE, M.A., M.D., C.M., M.R.C.S., Professor of Bacteriology, University of Liverpool. London: Cassell and Co., Ltd. Three volumes. 1932. Pp. 3330. £6.

Choyce's surgery was recognised as a magnificent achievement from the day of its publication. It reflected all that was good in English and foreign practice, it omitted nothing of any account, it maintained a uniformly high standard, and some of its articles indeed were the finest of their kind in the English language. It was, moreover, excellently printed and illustrated. It seemed almost impossible that future editions should keep to this high level of accomplishment; yet this has been achieved. Some of the original contributors are unfortunately no longer alive, while others are now taking a less active part in surgery, so that the services of new writers had to be enlisted. The editor has chosen these with discretion, and under his supervision the added matter has been welded into the whole. It is impossible to review each section in detail. All the original contributors who have undertaken the work of revision seem to have done it well. Attention therefore is directed to the articles by new authors.

Dr. G. E. Birkett's article on radium is well considered and balanced, emphasising as it does the accurately known facts of radiotherapy. It is sad to reflect that future editions will not have the assistance of this brilliant worker. The subject of radium and X ray burns is well treated by a new contributor, Mr. A. J. Gardham, who writes also of burns in general, giving a good account of modern treatment. Mr. J. B. Hunter has ably revised the chapter on the clinical course and treatment of inflammation. Venereal diseases other than syphilis are described by Mr. A. H. Harkness, obviously from a large experience. The account of gonorrhœal arthritis, however, is not adequate, for to acute arthritis only three and a half lines, to hydrarthrosis two and a half lines, and to polyarthritis one and a half lines are devoted. In the notice of acute epididymitis the views of surgeons who believe in puncture or incision are not mentioned. The author has probably found no advantage to be derived from them. We note also his belief that there is no place in the treatment of these diseases for vesiculotomy, vasostomy, or catheterisation of the common ejaculatory ducts. This article is marred by such sentences as "the best treatment of this condition is to avoid it" (p. 809) and "a diagnosis of prostatitis is seldom wrong if during a course of irrigations the urine passed into both glasses is muddy" (p. 791), where the meaning is rather obscure.

Prof. A. K. Henry contributes an excellent article on surgical diseases caused by animal parasites. We were unaware that the British weever fish may cause so much pain by its sting that its victim has leapt overboard in his agony, and that this pain can be immediately relieved by an injection of potassium permanganate. Local anæsthesia is described by Mr. H. N. Webber, who also writes on spinal anæsthesia. Both these articles are thoroughly up-to-date, but we regret to see the large bore Barker needle still advocated for puncture of the dura. Apparently the author has no objection to a combination of general and spinal anæsthesia, a procedure which would seem to put a very serious strain on the resources of a patient.

In Volume II. Prof. D. P. D. Wilkie has revised the article on diseases of the tongue. The account of lingual cancer is made valuable by the considered judgment on the use of radium. It is well to be reminded that there are some types and situations where the knife is still to be preferred. The author gives rather a scrappy account of the removal of glands on page 125, and the reader might think from his description that the internal jugular vein should be removed on both sides. In one place there seems to be a mistake in the dose of radium for sarcoma. We do not think it sufficiently emphasised that the essential step in the successful removal of a thyroglossal cyst is the excision of a portion of the body of the hyoid bone. It is only suggested that division of the hyoid may be necessary for access. This article would be more useful if formulæ for the paints, ointments, and solutions recommended in treatment were more regularly supplied. It is of interest to learn that radium tends to make leukoplakia worse after an occasional temporary improvement. Mr. H. S. Souttar's contribution on the œsophagus is well planned and balanced. He is not sanguine as to the prospect for surgery in carcinoma of the œsophagus, though due notice is taken of the rare successes of excision. The difficulties of radium treatment are fairly expounded.

The splendid article on the stomach originally contributed by James Sherren has been revised by Mr. A. J. Walton. Sherren's article was above all an account of personal experiences to which it owed so much of its attraction and value. Mr. Walton has tried to maintain its character, but has not been quite successful; he would have been better advised to rewrite the whole article from his own extensive experience. The cauterisation of an adherent chronic gastric ulcer combined with gastro-jejunostomy (p. 251) is a recommendation which few, if any, surgeons follow. Nor do we think in operating upon a perforated gastric ulcer many search for disease of the gall-bladder and appendix (p. 256), whilst it is curious to read that "when the ulcer which has perforated is a chronic one, if the condition of the patient will permit it should be treated as ulcer without this complication." Does the author really mean that he advises a partial gastrectomy? It seems likely that he does, for the matter is referred to again rather obscurely under "ultimate prognosis" on page 257. The statement that duodenal ulcer is most commonly situated on the anterior wall of the first part of the duodenum is still adhered to, although it is contrary to the experience of pathological anatomists in the post-mortem room and to that of surgeons who expose the pancreatic wall of the duodenum in their operations. Modern statistics do not support the claim on p. 263 that at least 90 per cent. of cases of duodenal ulcer can be cured by gastro-jejunostomy. Even if they were only mentioned to be condemned, the experiences of von Eiselsberg, Finsterer, Clairmont, and other continental surgeons in resection operations for duodenal ulcer might fairly be looked for in a textbook of these dimensions. The treatment of gastrojejunal ulcer is rather inadequately described; we read that "this should be preventive," a misuse of words, and "the whole abdominal cavity should be investigated and any other disease there present dealt with." It would be interesting to hear what other disease in the abdomen causes a gastro-jejunal ulcer.

The section on the intestines has been revised by Mr. K. Paterson Brown, who has ably maintained the standard of the original article. The account of intestinal obstruction is one of the best chapters in the book, and is beautifully illustrated. Since the last edition the importance of chloride therapy in this condition has become clear. Alkalæmia is indeed mentioned as one of the adverse factors in obstruction on page 357, but under treatment, later on, we are not told how to combat it. On page 400 we are informed that in post-operative obstruction abdominal pain and colic are seldom complained of. If the author is thinking only of paralytic ileus this may be true, but the statement as it stands is certainly not. Ileo-sigmoidostomy recommended for colitis has been abandoned, and rightly so. It is a little disappointing that in the otherwise excellent account of carcinoma of the colon only 36 lines are devoted to surgical treatment. This section could have been expanded with benefit.

Mr. B. W. Williams now takes part in the chapters on the appendix and peritoneum. Belonging to a school where the delayed treatment is practised, it is not surprising that he gives a good account of this, and categorically states that the difficulties and complications directly attributable to the operative interference outweigh those of the disease. His case is weakened, however, by the subsequent admission that some cases demand operation owing to spreading peritonitis, and that none can foretell what the course of any individual case will be. The statement made on page 446 that it should not be necessary to open a pelvic abscess through the rectum or vagina surprises us. Murphy's method of proctoclysis is not quite correctly described on p. 473; 1 to 2 feet head of water is too great a pressure to use. Murphy insisted on only a few inches to avoid soiling of the bed, and to allow of the expulsion of flatus. Many surgeons find that water is much better than saline solution, which leads to the introduction of too much chloride.

In Vol. III. Mr. Geoffrey Jefferson has written the chapter on peripheral nerves—providing a straightforward modern account of this difficult branch of surgery. Mr. W. Trotter's article on the scalp, skull, and brain remains, under the revision of Mr. Julian Taylor, one of the best to be found anywhere. We note that injection of the Gasserian ganglion is not regarded here as successful as other reports would indicate. We could find no account of the technique of ventriculography or of the increasing use of diathermy in cerebral surgery in recent years. Mr. Taylor also coöperates in the chapter on the spine with happy results.

It requires careful and close reading of this text-book to reveal the passages which might be improved, whilst there is abundant and obvious occasion for praise. Prof. Choyce deserves warm congratulation upon the manner in which he has carried out a task of immense magnitude.

Synthetic Anatomy

By J. E. CHEESMAN, Deputy Medical Officer of Health for Leyton. London: Baillière, Tindall and Cox. 1932. 156 plates. 42*s*.

Dr. Cheesman's ingenious work is now complete. Many students and others who have derived help from the study of these transparent drawings will be pleased to have the full number in their possession. They are intended to supplement, not to supplant, orthodox methods of teaching anatomy, and are admirably planned to serve this end. Part X., the Brain, the last to appear, is sponsored in a foreword by Dr. G. W. B. James, while Prof. J. E. Frazer has contributed an introductory note to the whole series. There can be no doubt that many, in this and in other countries, to whom the descriptive anatomical structure of the body was little more than one of the painful necessities of a medical education, have been led by the examination of these plates to a better way of thinking. The clearness and accuracy of the drawings of the successive layers have had much to do with this result. The author and the publishers are to be congratulated on the completion of this work.

Diseases of the Blood

Second edition. By A. PINEY, M.D., M.R.C.P., M.R.C.S., Director of the Pathological Department, the Cancer Hospital, London. London: J. and A. Churchill. 1932. Pp. 310. 18*s*.

Dr. Piney prefaces the second edition of his book on diseases of the blood with the statement that he only puts forward such views as are commonly accepted. Perhaps as one of those hæmatological enthusiasts he describes as gazing through "charmed magic casements, opening on the foam of perilous seas, in fairy lands forlorn," he has not had the opportunity to keep pace with the more mundane observations of clinical workers. Certainly it is hard to believe that all his statements will meet with general acceptance. He gives a full account of the development of the cells of the blood followed by an analysis of the ever-growing number of blood diseases. Some conditions, like status lymphaticus, whose very existence is denied by many pathologists, are included without question. The hæmatological and anatomical findings, together with possible treatment, are discussed and in many cases fully illustrated from the author's own case-records.

The definition of Banti's disease as a primary disease of the spleen, without qualification, is a bold assumption. Many observers believe that the splenic enlargement is only secondary to some form of portal obstruction. The typical cells of Gaucher's disease are usually thought to contain a phospholipin; Dr. Piney states, without producing any fresh evidence, that the characteristic content is an albuminous substance. His dogmatic statements about acholuric jaundice are equally surprising. Gänsslen has described a large group of cases with no splenic enlargement, while latent cases may present no anæmia.

Misstatements of fact as regards ætiology and treatment are unfortunate in a book which will appeal to the general practitioner. No mention is made of the remarkable therapeutic value of small and repeated blood transfusions in icterus gravis of the new-born. The anæmia of infancy is not regarded to-day as a physiological anæmia. It has been shown by H. Mackay and other observers to be dependent upon a deficiency of iron and to be readily relieved or prevented by the administration of iron alone. On one page Dr. Piney describes it as physiological and likely to be relieved by iron, on the next as "due not only to an iron deficiency." The literature contains scanty evidence that liver extract alone is helpful in treating post-hæmorrhagic anæmias, either clinical or experimental, while iron in adequate amounts, especially if given in conjunction with whole liver, is a powerful aid in blood regeneration. Dr. Piney advises the administration of liver extract, but omits all mention of iron. He is surely unduly pessimistic when he states that "we are completely ignorant as to the mechanism by which the number of leucocytes in the circulation is regulated." The work of Doan, Parker, and Jackson has not only indicated one factor in this regulating mechanism, but has given us a powerful therapeutic agent in certain disturbances of the mechanism. The use of nucleotide is one of the most interesting advances in recent hæmatology.

The book is pleasantly illustrated with the portraits of men who have contributed much to modern understanding of blood diseases. We hoped to find their teaching on the printed page but were disappointed. The chapters are headed with quotations from the poets—"I can be nothing at all, if it is not critical wholly" should be taken as a warning by readers.

Studien über die Entstehung und den Verlauf der Lungenkrankheiten

Second edition. By N. PH. TENDELOO, Professor der allgemeinen Pathologie und der pathologischen Anatomie, Direktor des Pathologischen Instituts der Reichsuniversität, Leiden. Munich: J. F. Bergmann. Pp. 219.

THIS book is one of a small and select company of text-books of pathology which approach the origin of pulmonary disease primarily from the point of view of physiology and function. Broadly speaking, the work may be divided into three portions—an introductory physiological section, a second section dealing with the morbid anatomy of emphysema, and a third section which occupies the major part of the book, devoted to infectious pulmonary diseases. One of the most important parts of the introductory section is a very full account of the mechanism of respiration looked at from the point of view of a pathologist who is primarily interested in impaired function. Another valuable contribution in this section is the long discussion on the inhalation of dust and the pneumonoconioses. Based largely on the early work of Arnold, this particular section will be read with profit by all whose work demands a special interest in industrial respiratory disease.

The section on infectious pulmonary diseases, after a short introduction on the physical and biochemical aspects of these conditions, is devoted to a long and detailed inquiry into lobar pneumonia, bronchopneumonia, and atypical pulmonary inflammations such as infection of the lung in influenza, psittacosis, the typhoid group of diseases, and in plague. It also deals briefly with rare conditions which are not too easy to define clearly, such as "asthenic or adynamic pneumonia," "nervous pneumonia," "abortive pneumonia." The last portion of this section of the book is devoted to a discussion on pulmonary tuberculosis. Throughout this long section Prof. Tendeloo focuses the attention of the reader on a series of questions which are repeated in italics at the head of each subsection. These deal with such matters as the point of origin of the infectious disease; the way in which it extends; the infective agent; the site of the primary and secondary infection; the influence of the various pathological factors on secondary infection; and the significance of the infection in determining the nature of the tissue change. With slight modifications these questions constitute the framework on which the descriptions and discussions are based. Naturally much more emphasis is laid on the soil than on the seed, the latter being a purely bacteriological matter with which the writer is not so much concerned. There is a good bibliography of the earlier work, but we found a little disappointing the omission of references to the recent work on pulmonary asbestosis and on silicosis. Presumably the author regards primary pulmonary neoplasms as outside the scope of the book.

Nervous Disorder in Infancy and Childhood

By NEILL HOBHOUSE, M.D. Oxf., M.R.C.P. Lond., Physician to Out-patients, Victoria Hospital for Children; Assistant Physician, West End Hospital for Nervous Diseases. London: H. K. Lewis and Co., Ltd. 1932. Pp. 212. 8s. 6*d*.

IN this small book Dr. Hobhouse has provided an excellent survey of ground which lies within the province of both neurologist and pædiatrician, and which is seldom thoroughly explored by either. Without entering more deeply into the pathology of the conditions he describes than is necessary for their clinical appreciation, Dr. Hobhouse presents his subject in a way that cannot fail to interest the practitioner. "Nervous disorder" is used in the widest sense, to include both conditions having a demonstrable organic basis and those lying in the borderland between neurology and psychology. A brief outline is given also of the more important psychoneuroses manifested in childhood, and a final section is devoted to mental arrest and deficiency. The presentation of such controversial matters as the causation of the infantile cerebral palsies is excellent, and the book as a whole is admirably balanced.

Human Cancer

BY ARTHUR PURDIE STOUT, M.D., Associate Professor of Surgery, College of Physicians and Surgeons, Columbia Hospital, N.Y. London: Henry Kimpton. 1932. Pp. 1007. 45s.

THIS elaborate monograph deals with human cancer and human cancer alone. No space is devoted to generalities, and no attempt is made to treat malignant disease as a biological and experimental problem. After the briefest introduction, Dr. Stout describes the disease as it affects various tissues and organs of the body. The scope of the work is indicated by its sub-title, "Etiological Factors; pre-cancerous lesions; growth; spread; diagnosis; prognosis; principles of treatment." Some regions of the body are naturally treated in much greater detail than others. Malignant disease of the mammary gland, for example, is discussed exhaustively, but other regions of the body receive due consideration and the author is to be congratulated on a balanced review of the whole subject. Dr. Stout takes a sane view of the relation which should obtain between the surgeon and the pathologist, and his estimation of the relative importance that should be assigned to clinical and pathological observations in the diagnosis and treatment of malignant disease is to be commended. He gives a word of caution on the modern doctrine that it is possible to determine the degree of malignancy of any particular tumour from its histology; this does not come amiss. The microscopical diagnosis of the degree of malignancy as formulated by Broders is, he holds, of value provided one has an opportunity to study the tumour in general and not just one portion of it, but he emphasises the danger of placing too great reliance on an incomplete histological examination, a warning which is repeated more than once in the book. With his views on the value of the rapid section prepared at the time of the operation we also concur. Such a section may be of great value, but the difficulties and possible fallacies of this method must not be forgotten. One phrase is unfortunate. On page 316, in discussing the value of the microscopic diagnosis of malignant disease, Dr. Stout says: "With care and experience, one can separate the malignant from the non-malignant with a considerable degree of accuracy; certainly with far greater accuracy than by any of the serological and other methods of cancer diagnosis." This is surely an understatement of the contribution morbid histologists have made to clinical medicine.

In his preface the author alludes to silver as a diagnostic stain, and the technique of silver staining is described by Dr. George F. Laidlaw in a short appendix. Hardly enough reference to the value of this method is made in the text to indicate in what way this technique is superior to older ones.

The book is well illustrated and to each chapter is attached an adequate bibliography, the references being arranged according to the year of publication. The work will, we think, be appreciated both by the surgeon and the clinical pathologist.

Précis de cancérologie

By G. Ducuing, Professeur à la Faculté de Médecine, Chirurgien-chef des hôpitaux. Paris: Masson et Cie. 1932. Pp. 1259. Fr.140.

This book, by the director of the cancer clinic in Toulouse, has been written, as Dr. Ducuing explains in his preface, to enable the medical student to find in one volume a statement of the pathological conceptions of cancer and the clinical facts and observations regarding different tumours. The first 250 pages set out the general pathology of cancer including its experimental investigation, and a chapter on treatment follows. The greater part of this chapter is devoted to a fairly detailed account of the principles and practice of radiotherapy. The remaining 900 pages deal with the study of malignant tumours in the different sites. A brief review of the anatomy of the normal structures precedes each section, and the author then gives an account of the ætiology, morbid anatomy and histology, symptoms, prognosis, complications, clinical forms, diagnosis, and treatment of malignant tumours affecting the region. The book is written in a clear and concise style and is illustrated by instructive diagrams. The information conveyed is sound and reliable, and generally, wherever a point is in dispute, this is clearly indicated. But under the heading Contagion the author discusses the evidence of cancer houses, cancer cages, cancer à deux, and after pointing out the unconvincing nature of such evidence concludes nevertheless that "the problem of the contagious nature of cancer has not been solved." The author may have confused here the terms "contagion" and "infection," but in any case it would be a serious mistake to give the medical student the impression that cancer may in any circumstances be a contagious disease.

The book can be recommended to the medical student and the practitioner.

The Causes of Evolution

By J. B. S. Haldane, F.R.S. London: Longmans, Green and Co. 1932. Pp. 234. 7*s.* 6*d.*

These lectures were given to the University of Wales at Aberystwyth, and their purpose is to rehabilitate, in the light of modern knowledge, the Darwinism which many have supposed to be discredited or even dead. They fall into two parts. In the first Prof. Haldane gives an account of the discontinuous variations *per saltus* which have occupied the geneticist so much since the rediscovery of Mendel's work. He describes the various ways in which unit characters can vary either alone or in combination with one another, and draws attention to the fact that the results may on inspection be indistinguishable from a continuous series. Of all this Darwin knew hardly anything, and what little had come to his notice he deliberately put aside. Such variations, in Prof. Haldane's opinion, give material which is adequate to account for new species if it is sifted by means of natural selection. The second part discusses the operation of natural selection in the light of the mathematical work of R. A. Fisher, S. Wright, and Prof. Haldane himself; here for the first time it is attempted to find out what really happens when one form has this or that degree of advantage over another. The mathematics of the appendix in which the details are given may be unintelligible to many people, but the conclusions which emerge are of great interest and obvious importance. In summary, the book argues, interestingly and open-mindedly, that natural selection is the main cause of evolutionary change, though it will not account for the actual steps by which individuals come to differ from their parents. These are due to other, unknown, causes and hence evolution can follow only certain paths.

Microscopic Slide Precipitation Tests

For the Diagnosis and Exclusion of Syphilis. By B. S. Kline, A.B., M.D., Chief of Laboratories, Mount Sinai Hospital, Cleveland, Ohio. London: Baillière, Tindall and Cox. 1932. Pp. 99. 13*s.* 6*d.*

The Kline test is a refinement of the Kahn test, Dr. Kline having originally attempted to overcome the great drawback of this test, which is difficulty in reading, by performing the Kahn test on a slide and reading the results microscopically. Although in 95 per cent. of cases agreement was reached with the clinical condition of the patient, Kline went on to investigate the optimum requirements for antigen preparation, cholesterol, mixing of ingredients, temperature effects, &c. The book contains a good but superficial review of these variations and their effects. The outcome of all this work was the development of the Kline tests for use on heated or unheated serum, cerebro-spinal fluid, or defibrinated blood (which can be taken from the finger). The most important factors in the test are the substitution of the acetone insoluble fraction of alcoholic heart extract (phosphatid) for the ordinary alcoholic ether extract used for other tests, and the use of ringed slides in which the tests are carried out, which allow the results to be read microscopically. The routine test on heated serum is a very simple process which is easy to read, and can be carried out without elaborate apparatus. This, together with the more sensitive method—the exclusion test—should become one of the standard flocculation tests for use in the early sero-diagnosis of syphilis, and as a criterion of complete cure more reliable than the Wassermann reaction.

The book itself is short and is simply written, but the author appears to set himself the task of filling more space than was strictly necessary. This has resulted in some excellently produced full-page photomicrographs showing positive and negative reactions which are quite useful; but it is a pity that the book should have been half filled with puerile pictures illustrating the various stages in the different tests, including repeated drawings of a microscope, test-tubes, centrifuge, and even a collection of animals to indicate when each of these is to be used.

THE LANCET

LONDON: SATURDAY, JANUARY 7, 1933

EFFICIENCY IN MEDICAL PRACTICE

KNOWLEDGE comes but wisdom lingers. In the world at large the outstanding failure of 1932 was a failure to apply the unprecedented power that has come from new knowledge. For the moment what is needed is not so much fresh discoveries—fresh gifts from the gods—as the will and wisdom to apply those we have already. And what is needed by the world at large is needed in most of its constituent activities—including medicine. Speaking of conditions in America Dr. RAY LYMAN WILBUR says: "We now find ourselves with a great mass of usable facts, with a splendid body of trained men and women ready to apply them for the benefit of humanity, but without an administrative or economic system which will give all members of our society an even or an adequate opportunity to profit by them."[1] This country, unlike the United States, has a scheme of national health insurance which does much to keep practitioners in touch with those who require their help and could not otherwise get it. But which of us here is really satisfied with the efficiency of medical service as a whole?

Dr. WILBUR's remark was made in introducing the report of a committee which has been studying for five years the manifold problems presented in providing an efficient medical service. This committee (see p. 47) was impressed by the failure of medical service both in quantity and quality, and by the wastefulness of private practice as at present conducted in the States. Its majority report says that the solution is group practice for group payment. While the personal relation between patient and practitioner must be preserved—and those who like to do so can pay individual fees as at present—the costs of medical care should be provided through insurance or taxation or both, and the service should be given by groups of physicians, dentists, nurses, pharmacists, and other associated personnel. These groups are to be organised, preferably round a hospital, for rendering "complete home, office, and hospital care." While all the basic public health services are to be extended, it is the duty of every State and local community to see that the local machinery is in smooth running order. To quote Dr. WILBUR again:—

> "The more local we can make the conduct of these medical enterprises . . . the better the results are going to be. Those who know the most about the individual are those near at hand, and, if they can make these decisions, we are almost sure to have them reasonably wise. I fear decisions in this field made too far afield by legislative groups with authority and with funds. But I also fear that that is exactly what will happen if the medical profession fails to go at this job and do it well."[1]

What the minority of the committee fear, on the other hand, is the exploitation of doctors by business men, and the further removal of the general practitioner from the central place in medical practice. Government care of "the indigent" is, indeed, to be expanded; but only with the ultimate object of relieving the medical profession of this burden. The minority report, which represents the official view of the American Medical Association, thinks that insurance is the shortest road to the commercialisation of medicine. Wherever voluntary insurance is provided by contract with organised groups of doctors there is (it is stated) solicitation of patients, destructive competition among professional groups, inferior medical service, loss of personal relation of patient and physician, and demoralisation of the profession. Having devoted two long leading articles to dismissal of the majority's proposals, the Association's *Journal* (Dec. 10th) says:—

> "There is, moreover, a far greater concern than the rights of the physician to practise as his knowledge and training indicate is desirable. There is the question of Americanism versus sovietism for the American people. There is the question of the right of the American citizen to pick his own doctor and his own hospital, to pay his own bills with his own money, to be responsible to a doctor who is responsible to him."

This would be more convincing if it were true that all Americans are well off. But in the United States, as in England, there are many people, besides the really poor, who avoid medical care because they cannot pay for it. Why is it better that they should insure themselves with an insurance company (which makes a profit) than with a group of doctors?

In industry the proper place of private and public enterprise is to-day in doubt. So it is in medicine, with the additional complication that here there is a third form of undertaking—the charitable. What sort of equilibrium are these three going to reach? Popular political theory now favours formation of semi-independent public trusts, like the B.B.C., and instead of the long-prophesied State medical service we are perhaps to see a National Medical Corporation, under medical management, providing complete medical care for everybody who buys a licence at a post office. Fashions change, however, and for the moment there is no question of choosing an organisation which shall comprehend and unify every form of medical service. Meanwhile the profession is too wise (or disillusioned) to support or condemn particular schemes because they can be given political labels: the test is, do they work? It is hard to foretell the future, but if we cannot see our objective we can at least examine the methods now in use, detect their faults, and decide which of their features must at all costs be preserved. Economic pressure has done much to prevent the expansion of municipal health services, but in certain localities we shall soon have an example of what can be done in providing medical help for every citizen who needs it. Does this plan work? Economic pressure, again, is altering the ideal of our charitable hospitals; they are turning to systems of contributory insurance for their support, they may even be obliged to pay their visiting medical staffs. Is this the service demanded by our middle classes? How far can the hospitals take up the burden of chronic ill-health which causes so much distress and economic loss to-day? The King's Fund report (noticed on p. 42) rightly concludes that out-patient departments are not fitted to bear this burden—that they should more and more be consultative centres.

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[1] New Eng. Jour. Med., Dec. 15th, 1932, p. 1073.

If, however, the burden is to be passed back to the general practitioner, his facilities for treatment must be better. The *Journal of the American Medical Association* (Dec. 3rd) says that experience has shown that more than 80 per cent. of all the ailments for which people seek medical aid can be treated most cheaply and most satisfactorily by a family physician with what he can carry in a handbag. This may be true; and like the *J.A.M.A.* we believe that the general practitioner ought to take the central place in medical practice. But we do not believe in family doctors who have no resources, no interests, outside their handbags. We believe that association and coöperation with other practitioners, and preferably with hospitals, will be required for practice in the future. The American scheme of group practice round a hospital, with its reminder of the Dawson report, is one way of achieving this object: the "public medical services" of this country represent another; and a public medical service with hospital and other equipment of its own would approximate to the ideal of Dr. Wilbur's committee. More humble, but none the less important, was the suggestion for "medical houses" put forward by a correspondent in our columns just a year ago.[2] We have yet to hear that anyone has explored the possibilities of this reasonable proposal; yet it is on such experiments, not on social theorising, that the future of medical practice depends. And without efficient medical practice we shall get little good from medical science.

METABOLISM OF THE CANCER CELL

Whilst there is nothing new in the basic idea of chemical differences between normal and malignant cells, it is only in recent years that the existence of definite abnormality in the metabolism of the cancer cell has received experimental proof through the brilliant researches of Otto Warburg. The cancer cell is distinguished above all by its power of rapid and uncontrolled growth. Such growth demands supplies of energy not liberated by hydrolytic reactions or lipase action, so that whilst the study of such processes may yet be of the greatest importance it cannot yield directly the secret of the rapid growth of tumour tissue even in its more limited aspect as a problem in metabolism. If we consider the processes which may yield energy for growth in animal tissues the main source is, of course, the tissue-respiration, and it is therefore at first sight surprising that it is only in very recent years that the oxidative reactions of the cancer cell have received any thorough investigation, though the pioneer experiments of B. R. G. Russell and W. E. Gye were made in 1920. The reason for the apparent neglect is that the study of the respiration and oxidative metabolism of the cancer cell, like many other problems of cell-physiology, has had to await the development of sufficiently refined methods. Now, as H. G. Crabtree points out in a recent review,[1] the whole subject of the chemical reactions occurring in animal cells and supplying their demands for energy which can be utilised for growth and functional activity, has been made accessible to experimental study. Prof. Warburg's work on cancer was a logical development of earlier studies of a purely physiological problem connected with the oxidative changes in the sea-urchin's egg: Warburg found the respiration of the eggs to be enormously increased when the eggs were fertilised. Rapid development was here accompanied by a great increase in cell-respiration, and the question arose whether this was also true of the cells of rapidly proliferating tumour tissue. Methods of great delicacy were evolved in order to put this idea to experimental test; but it was soon clear that no difference in respiration of anything approaching the same order exists between normal and tumour tissues. In fact the amount of oxygen consumed by the two does not differ at all markedly.

These earlier experiments on the metabolism of the cancer cell, though yielding an enigmatic response as far as the respiration was concerned, led Warburg directly to the discovery in 1923 of an alternative energy source possessed by malignant tissue—its extraordinary and previously unsuspected power of lactic acid formation. It is this discovery which has been the direct starting point of all recent work on this subject. Cancer cells differ from the great majority of normal tissue cells in their enormous production of lactic acid; an outpouring which persists even when the cells are freely supplied with all the oxygen of which they can make use. Every hour a quantity of lactic acid equal to a tenth of the dry weight of the tumour tissue is produced; in 48 hours therefore a weight of lactic acid approximately equal to the tumour's own fresh-weight may be poured forth from the malignant tissue. The breakdown of carbohydrate into lactic acid is, as is well known, a process in which considerable energy is set free; in muscular contraction, for example, the energy may be used for the production of mechanical work, whilst the lactic acid bacteria are able to grow and multiply anaerobically at the expense of the same chemical reaction. Thus the tumour cell has at its disposal, besides its respiration, an additional source of energy not dependent for its existence on the oxygen supply of the tumour: for short periods, at any rate, the tumour cell can live under strictly anaerobic conditions, as experiments in Warburg's laboratory have shown, though in order to enable it to do so the tumour must have an adequate supply of sugar for its anaerobic life. Here therefore was a discovery of prime importance, the significance of which is even now not fully realised. So striking is this property of aerobic glycolysis of the cancer cell that it is sometimes forgotten that the respiration is still quantitatively the main source of energy of malignant as of other tissues, accounting on an average for some 70 per cent. of the cells' total energy output. The glycolysis is not to be regarded as an independent entity, unconnected with respiration: and in the last few years attention has been more and more focused on the relationships existing between respiration and lactic acid formation in animal tissues. Nearly all tissues are able to form lactic acid from carbohydrate when their respiration is damaged or suppressed—as. for example, by poisoning with cyanide or by maintaining the tissue in an oxygen-free atmosphere. Embryonic tissues were under these conditions found by Warburg to give rise to amounts of lactic acid which, in the case of very rapidly growing tissues. may equal those formed by the most active tumours. In tumours therefore the respiration has to a large extent lost the property. which it normally possesses in almost all normal tissues, of suppressing the lactic acid formation. Normal tissues, with a very few exceptions. of which the warm-blooded retina is the most striking example, do not form any appreciable quantity of lactic acid under conditions where care is taken that their respiration shall be uninjured, as in the conditions of Warburg's experiments. On the other hand. by a partial asphyxia produced by depriving embryonic tissues of oxygen for a time, or by cyanide poisoning, Warburg was able to show a change of metabolic habit, resulting from the injured respiration, so that in the partially asphyxiated tissue aerobic glycolysis was regularly found, even when the full oxygen supply was restored to the tissue. It is possible that the abnormality of the retina, mentioned above, may be referred to a similar cause on account of the great sensitiveness of this tissue to oxygen deprivation. In any case, it is clear that much more knowledge is urgently needed concerning this damage to respiration in tumour tissue. From measurements of respiratory quotient F. Dickens and F. Simer have concluded that it is the oxidation of carbohydrate that is primarily affected in tumour tissue; for whilst they found the respiratory quotient of rapidly growing embryonic mammalian tissues was almost always unity, indicating normal oxidation of carbohydrate. in tumour tissues the respiratory quotient was always less than unity as measured by the specially devised methods of these authors.

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[2] Friel, A. R.: The Out-patient Problem: a Suggested Policy, The Lancet, 1932, i., 55.

[1] Thirtieth Annual Report of the Imperial Cancer Research Fund, November, 1932.

As yet attempts of therapeutic application of Warburg's discoveries have not yielded any very definite results. The ability of the cancer cell to live without respiration provided that it has adequate carbohydrate, or in a medium of low sugar concentration if it is able to respire, militates against therapeutic attack by deprivation methods. It seems clear that our knowledge of the metabolic aspects of the problem have not as yet been carried far enough to enable us to devise means to restore the metabolism of the cancer cell to normal to be made, except upon empirical lines. This is one of the many problems opened up by Prof. Warburg's discoveries.

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PSYCHOTHERAPY IN THE CURRICULUM

If it were possible yet to see in proper perspective the trend of medical progress during the year now ended, it seems likely that the penetration of psychological views into general medicine would stand out as its most salient feature. For long this penetration was so slow as to be almost unrecognised, but the acceleration of a change of outlook, which is not confined to this country. has recently been so notable as to betoken the opening of an important phase in medical history. Dr. Gillespie, in a lecture on psychotherapy and general practice which is printed on another page, suggests that since the development of scientific ideals medicine has shown a bias in favour of physical ætiology for every disorder and a persistent disregard of psychological aspects. Some results of this bias are manifest in the case-histories he records. Dr. W. Langdon Brown, in his inaugural lecture as Regius professor in Cambridge,[1] rejoices that in these latter days medicine is becoming increasingly psychological in its approach to disease, while not neglecting the development of its scientific armamentarium. His personal conviction, gained "by sheer force of experience," of the need for a more scientific approach to medicine was forcibly stated in his address at the recent opening of the new home of the Institute of Medical Psychology (see p. 64). No one is likely nowadays to doubt the truth of his contention that quite as many people are ill because they are unhappy as are unhappy because they are ill. Many general practitioners, who not so long ago were sure of their competence to deal with most of the cases presented to them, are now becoming conscious of the large proportion of their patients who really require mental rather than physical alteratives, and are dissatisfied with their equipment to cope with them. This dissatisfaction was voiced recently at an old students' dinner when the plea for help from the teaching schools received unexpectedly wide support.

The almost complete omission of the subject of psychotherapy from our medical curriculum, has a bearing on the dispute now raging (see p. 54) whether or not a practitioner is entitled to claim a fee for such treatment in respect of his panel patients. The opposition to its inclusion can only be understood when the attitude is viewed in historical perspective. Towards the end of the last century the experiments of Charcot and the more productive efforts of Janet had prepared the way for Freud. whose work offered at least a pathology of those psychoneurotic conditions which, in some guise or other, had always been a puzzle to medicine. Attention was being attracted to this work when the Great War broke out. Then came the shell-shock episode and, in accordance with the mental attitude of the time, there was built up a phantastic pathology, and we decorated hysterical subjects with wound-stripes as a sign of having received physical injury at the hands of the enemy. When the loss of man power attributed to shell-shock forced a recognition of the psychological nature of disorders of this category, qualified medical men were encouraged to take up the study of psychopathology in order to treat the abundant material that cumbered our military hospitals. Then the new theories were, in some form or other, found indispensable to the understanding and treatment of the condition, and the young men thus initiated into the subject became a leaven that encouraged the change of attitude alluded to above. The clash of principles manifest at this time was, however, but a repetition of ancient controversy. Vitalists and mechanists, under various names, have supported their opposing principles throughout the centuries; to the *physis* of Hippocrates, the *anima* of Stahl, the *blas* of Van Helmont, were opposed the atoms of Asclepiades and the ethereal fluid of Hoffmann, and now we may choose between the libido of the psychoanalysts and the glandular predominances of Berman, or build up out of conditioned reflexes a psychology without a psyche. In the eighteenth century arose a pseudo-physiological terminology that has just received a blow from the request, in the Official Nomenclature of Diseases, that the word "neurasthenia" should be avoided. Aided by this terminology, and encouraged by wonderful advances in a material science that counted teleology as heresy, we have regarded animism in any form as dead. If the medical student heard it mentioned it was as an obstructive theory finally overthrown by the synthesis of urea. For him the test-tube and microscope were ultimate authorities. and if a "nervous" disorder had to be labelled "functional" that was only because our methods had not quite reached the perfection that would enable us to understand its mechanism. This fundamental assumption is responsible for the irrelevant pathology that has led to so much mishandling of the psychoneurotic patient. It is the same assumption against which Stahl, a sound clinician, fought in the seventeenth century, when he protested that the anatomy and physiology of his day were given a greater load than they could carry. Unfortunately he departed from a safe agnosticism and propounded a sterile theory of animism which is remembered to his disadvantage, whilst the lesson he sought to teach has been forgotten. Now at last, however, psychopathology is presented to us as a body of observation and theory, adaptable to clinical use and capable of some degree of systematisation, whose advocates find in it nothing contrary to physiological principles. Objections have been made that the newer conception deals with what cannot be weighed or measured, that it departs from the basic principles of cause and effect by introducing the conception of aim, and is therefore unworthy to be granted validity as a science: but this expresses the attitude rather of nineteenth century science than the position in which we stand to-day. The practical psychotherapist tends to ignore such objections, while a study of their origin would enable him to meet them effectively.

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[1] Cambridge University Press. 1932. Pp. 52. 2s.

The rapid changes now taking place have thus a deep historical significance. Apart from special establishments like the Institute of Medical Psychology which has developed from modest beginnings as the Tavistock Clinic, and organises well-attended courses for practitioners, there are several out-patient departments at general and neurological hospitals, and at some teaching hospitals lectures are given on the psychoneuroses in addition to the old-established tuition in psychiatry. But whether the clinical material present in every department is used for demonstration or whether it is ignored, or even unrecognised, depends upon the personality of the physician or surgeon in charge of the department. There are two main obstacles to the development of special teaching: first, the lack of examination value, for no question on the subject is as yet expected at any qualifying examination; secondly, perhaps a relic of the bias against psycho-analysis, the impression that an interest in this subject is at best morbid and at worst indecent. On the other hand, the growing demand from both practitioners and students for instruction in psychopathology and psychotherapeutics is not likely to be ignored by the committee now considering the curriculum. Any official recognition given to psychotherapy, whatever its extent, should have beneficial results far beyond its immediate outcome, for a new orientation on the part of clinical teachers is at least as important as the organisation of specific instruction.

THE SEX HORMONES

IN many branches of medical research knowledge is developing so rapidly that the practitioner must rely upon well-informed reviews in order to keep up to date. Particularly does this apply to the mechanism of the internal secretions, and most of all to those connected with the regulation of the sexual cycle. Any person attempting to keep up with the world literature on this subject would have to devote his full time to reading, and even then it is doubtful if he would succeed in sorting out the wheat from the chaff, when the chaff can so readily be mistaken for wheat. What experienced worker would have believed a few years ago that pregnancy could be diagnosed accurately within the first few weeks of gestation by injecting the patient's urine into immature mice, and later inspecting their entrails in the augural manner? Recent development in this subject is well outlined in the article by Prof. Walther Schoeller, which appears later in this issue. He emphasises the great importance of a possible relationship between plant and animal hormones, and to many medical readers it may come as a surprise to learn that plants have hormones. The review indicates the complexity of the subject, and the large number of experimenters at present engaged on the problem. The major part of the pioneer work comes from Germany and America, but important observations have been made in this country without which progress might have stayed. Thus the chemical work of Marrian, referred to by Prof. Schoeller, has proved to be of much significance, and the chemical and physiological studies of Dodds, Parkes, and their co-workers have been another essential link in the chain.

ANNOTATIONS

THE NEW YEAR HONOURS

THE list of honours issued on Jan. 1st contains but a small number of medical men, and is mainly composed, according to what is becoming a regular plan, of those who obtain recognition or advancement in the various Services, militant and civil. Medicine, however, welcomes a new peer, and Sir Thomas Horder will be acclaimed by his fellow-practitioners as a worthy recipient of the high honour. Alike as a great clinical physician, and as a vigorous and acute worker in fields of wide social interest, Sir Thomas has the personality needed for effective membership of the Upper House, and the well-merited distinction will surely receive further justification. Four members of the medical profession receive knighthoods, among them being Major-General Dick Megaw, the Director-General, I.M.S., and Dr. F. J. Willans, surgeon apothecary to H.M. Household at Sandringham. Dr. Charlotte Purnell, who is created O.B.E., is the devoted medical missionary, who has worked for 20 years in Palestine, and is now in charge of the Mission Station in Amman. We note with pleasure the knighthood awarded to Prof. F. T. G. Hobday, the Principal of the Royal Veterinary College, in the interests of which he has worked long and untiringly; and many will appreciate, as we do, how well deserved was the same honour by Principal R. S. Rait, Vice-Chancellor of Glasgow University. Our readers will also approve highly of the bestowal of the C.B.E. on Mrs. Alice Baker, a founder of the Medical Research Institute, Melbourne; Mr. Reginald Blunt, for half a century associated with the Cheyne Hospital for Children; Mr. Peter Evans, an energetic worker in the cause of the blind; and Prof. F. H. A. Marshall, director of the Institute of Animal Nutrition at Cambridge and an authority on sexual physiology. A detailed list of recipients is published on another page, to all of whom we offer congratulations on the public acknowledgment of their merits.

RECTAL OR VAGINAL EXAMINATION IN LABOUR

THE examination of patients by the rectum during labour was recommended by Reis and Kronig in 1893, in the hope that the avoidance of vaginal examination might diminish the incidence of puerperal sepsis. The method has been widely used but has not met with general approval, and it is doubtful whether it has any advantage other than saving the trouble of washing the hands. H. W. Mayes has analysed [1] the results of rectal and vaginal examinations in 3884 cases at the Methodist Episcopal Hospital in Brooklyn. He found that the morbidity-rate among those patients who were examined per vaginam was about 1 per cent. higher than the morbidity-rate of those who were examined only per rectum. In 1947 cases examined by the rectum alone the morbidity-rate was 5·08 per cent. Rectal examination therefore does not abolish the danger of puerperal infection, and the higher rate following vaginal examination is accounted for by the fact that the parturient woman was examined by this route in all cases of difficult or prolonged labour. Of several objections to the routine adoption of rectal examination the most important is its inaccuracy. Dr. Mayes states that a 10 per cent. error is generally admitted for those with experience, and he suggests that the prevailing high stillbirth-rate may be due in part to the fact that abnormal conditions are not recognised in time by rectal examination. The student in fact finds it hard enough to make a diagnosis by vaginal examination and would, one fears, learn nothing if he were to examine his quota of 20 cases by the rectum instead. Before a man is sure of his rectal findings, Dr. Mayes remarks, he must follow at least 100 patients through labour. It should also be borne in mind that the posterior vaginal wall which is forced into the cervix during rectal examination cannot be considered much more sterile than the examiner's finger. Moreover, the rectal mucous membrane may be injured and pathogenic organisms escape into the tissues of the recto-vaginal septum. When the finger is withdrawn the perineum is left contaminated. The question is bound up with that of vaginal antisepsis which is not yet settled. In this country bacteriologists tell us that it is impossible to sterilise the vaginal wall, and most obstetricians think that the introduction of antiseptics into the vagina gives no better results than the customary swabbing of the vulva. Dr. Mayes advises the injection of mercurochrome, and thinks that by its means it is possible to sterilise the vagina. To one holding this view vaginal examination becomes a safe procedure, and he therefore recommends the abandonment of rectal examination during labour.

"THE SOCIAL PROBLEM GROUP"

AT the conference of the Central Association for Mental Welfare held last month in London, Mr. E. J. Lidbetter read a paper upon the Value of Family Histories in the Study of the Inheritance of Mental Defect. For the last 25 years he has been conducting an inquiry into the relation between heredity and social inadequacy in an East London area, his procedure having been to prepare elaborate family pedigrees of persons admitted into the poor-law institution of that area. This investigation has now attained comprehensive proportions, and he was able to show the meeting a few of his charted pedigrees. The following are among the chief conclusions reached: that a conspicuously large number of mentally defective children are born in families containing a record of certifiable insanity; that the families studied have a much larger fertility-rate and, as a result of the improvement of their conditions in recent years, a larger survival-rate than any other social element in the community; and that the principle of assortative mating clearly holds in the families he has studied. This last observation Mr. Lidbetter regards as eugenically encouraging. His evidence suggests that families containing defective, "sub-cultural," and mentally backward persons which, in aggregate, have been referred to by the Wood Committee as comprising the social problem group, are closely intermingled and overlap: and that they preserve their characteristics from generation to generation, and probably do not often, by intermarriage, vitiate good stocks or derive survival strength from out-breeding with such stocks.

Mr. Lidbetter's inquiries, conducted over a long period of years in a restricted urban area, confirm the findings of the much more comprehensive though less intensive survey conducted by Dr. E. O. Lewis and described in the Wood report. These findings raise biological problems of the first importance. To what extent are the various manifestations of social inadequacy evinced by the social problem group the product, on the one hand, of inborn and hereditary factors, or on the other, of such extrinsic influences as are constituted by the insanitary environment of a slum district, the bad family tradition, and subversive parental example which too often exist among them? The remedies adopted by social reformers will clearly depend on the answer to this question. In concluding his address, Mr. Lidbetter stressed the need of a comprehensive and impartial investigation, carried out under proper authority and by competent persons, and planned so as to supplement such local investigations as those now being carried out by Mr. Caradog Jones, of the department of social science at Liverpool University, and the Eugenics Society. The latter has devised a questionnaire which has the object of reversing the procedure followed by Dr. Lewis. The latter, starting from a specific investigation into mental defectiveness, was led to recognise the importance of a social problem group, largely composed of subnormal though not certifiably defective persons, who are the main procreators of mental defectiveness. The inquiry of the Eugenics Society, starting from a special manifestation of social inadequacy—in this case the continuous receipt of poor-law relief for two years or longer—seeks to ascertain whether the incidence of mental defectives in such families is higher than the average familial incidence obtaining in the community at large. It will be difficult to imagine an investigation of greater social importance than that proposed by Mr. Lidbetter. If the conception of a "social problem group" is justified, and if it has the characteristics which have been described, it is clearly a matter of national urgency that the fertility of its constituent members be limited by any reasonable methods that do not involve compulsion or injustice. In view of the high fertility-rate which all observers have noted as characterising the group, it would appear that if measures designed with this end are not soon adopted, seeds may be sown which, several generations hence, will germinate with disastrous social consequences.

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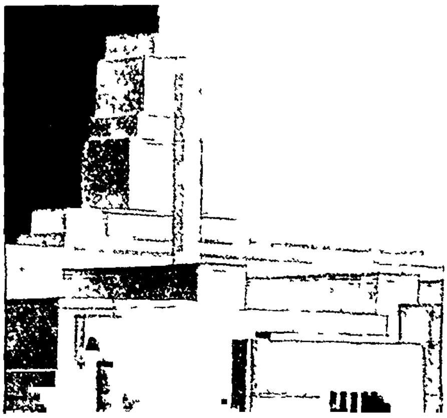
[1] Surg., Gyn., and Obst., December, 1932, p. 771.

THE LIVER IN ECLAMPSIA

DEGENERATION of liver cells is present in all or nearly all fatal cases of eclampsia, though only about half of them show the fibrino-hæmorrhagic necroses which are characteristic of the disease in the sense that they are never seen in its absence. But how the liver changes are produced has never been satisfactorily determined, despite a great deal of investigation, mostly along biochemical lines. Dr. G. W. Theobald,[1] working at University College, now produces an attractively simple mechanical explanation. He thinks that the lesions are due to increased intra-abdominal pressure—i.e., that they are the result rather than the cause of the convulsions. He supports his thesis with some striking experiments on dogs and cats. The animal has its belly tightened up somewhat by the injection of about a litre of bland liquid into the peritoneal cavity. Binders are then placed round the abdomen and drawn tight, by which manœuvre the intra-abdominal pressure is raised to 80–100 cm. of salt solution. Maintained for two minutes, this constitutes an imitation "fit." By this means, severe and extensive necrosis of liver is produced in nearly all animals, and as the liver is sensitive to changes in its blood-supply and autolyses quickly, quite obvious alterations, naked eye and microscopical, are found after 24 or 48 hours. The precise details of the necrosis varied a good deal in different cases; the damage was sometimes central, while in others it had no particular lobular distribution; extensive fatty change might be present or absent; and in one animal considerable portal thrombosis was found. The destruction was in some instances enough to cause death; a pregnant cat had five half-minute "fits," and was killed moribund 18 hours later. Other abdominal organs were not affected, though small hæmorrhages were sometimes found in the lungs and brain. Dr. Theobald draws the obvious conclusion that it is of the greatest importance to prevent the onset or limit the number of eclamptic convulsions.

LONDON'S UNIVERSITY CENTRE

ON Dec. 29th the first excavations were made on the site of the new University of London buildings to the north of the British Museum. The history of this great project has already been outlined in our columns[1] and we printed more recently[2] a reproduction of one aspect of Mr. Charles Holden's model. Four large holes have now been cut at points which mark the corners of the proposed Senate House and administrative block. The object of this survey is to discover the character of the subsoil; the southern part of the site will be excavated at once, and the formal laying of the foundation-stone is planned for the early summer. The new centre will cover 10½ acres and be bounded, roughly, by Russell-square and Montague-street on the east, Malet-street on the west, Byng-place on the north, and the British Museum on the south; its main part includes what was Torrington-square. The main group of buildings is to occupy the centre, and open spaces roughly equal to those which at present exist are to be left along the east and west frontages. The arrangement will greatly reduce traffic noise and vibration and allow generous parking accommodation for cars near each department. The Woburn-square frontage will be occupied by a private garden with a covered walk. As Mr. Holden points out, this type of plan offers great possibilities for a composition of the masses into one great whole which will be impressive even while still incomplete. The group will be dominated by a tower, and the whole centre will be so placed as to appear with quiet insistence from each of the main arteries in the neighbourhood—Tottenham Court-road, Gower-street, Malet-street, and Southampton-row. The composition of the buildings will be seen to its best advantage from Russell-square. Mr. Holden's object has been to express the plan naturally



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[1] Jour. Path. and Bact., 1932, xxxv., 843.

[1] THE LANCET, 1931, i., 1303. [2] Ibid., 1932, ii., 32.

in a modern design. The orderly disposition of the parts and the strong horizontal character of the whole should present a neighbourly front to the British Museum and the surrounding buildings without the necessity of introducing a columnar treatment. A complete film record of the building is being made.

The scheme will take some years to complete, but should be nearly finished when the University celebrates its centenary at the end of 1936. The Senate House should be ready in 1934. The cost of the site has been met mostly from private benefaction, and important contributions towards the expense of the buildings have been made by the London County Council, Mr. Samuel Courtauld, the Worshipful Company of Goldsmiths, and the Czechoslovakian Government, which has generously promised a sum for the building and equipment of the School of Slavonic Studies.

The new centre will mark a great change for the better in the conditions under which the University does its work. The portion of the Imperial Institute at its disposal is used from cellar to attic and the corridors are filled with makeshift structures, so that the daily work is handicapped by the utmost difficulty and discomfort. For its Great Hall the University has only a huge wooden shed, decorated on festive occasions with yellow and white muslin; and the library, including the Goldsmiths' collection of economic literature and the Durning-Lawrence Library, has long overflowed into passages and rooms continually used for other purposes. If the University is to impress itself upon London and Londoners, it must have a worthy and dignified home. On the new site there will be ample room for the administrative work and for the many bodies which meet daily; the Goldsmiths' munificence will ensure worthy housing of the library; the Institute of Historical Research will be moved from the temporary building in which, in the course of a few years, it has achieved a great reputation, and the Courtauld Institute of Art and the Schools of Oriental and Slavonic Studies will also be housed at the centre. Birkbeck College and the London Day Training College—renamed the Institute of Education—will be transferred, together with the headquarters of the Officers' Training Corps and the Students' Union. The brochure recently issued by the University includes a map showing how well situated the centre will be in relation to the majority of the constituent colleges.

"HOMEOSTASIS"

As man en masse progresses through his pilgrimage he marks his progress by making himself more and more independent of his environment. His cells and tissues have done the same; in birds and mammals they have secured a habitat for themselves of a steady composition and temperature, and have developed a whole series of ingenious and complicated reactions whose effect, and perhaps whose object, is to maintain the remarkable uniformity of the internal environment to which the special mark at 98·4° F. on the clinical thermometer is a characteristic witness. Why it has been worth while to develop cells which will work only under a very limited range of conditions is not altogether clear; an animal which must have its blood-sugar somewhere between about 50 and 150 mg. per 100 c.cm., the reaction of its blood between pH 7·0 and 7·6, and its temperature between 95° and 105° F. would seem to have given hostages to fortune. But so it is, and we can only suppose that the body does its best work in such surroundings. And without thinking too much of the reasons for it, we can with much profit study the "wisdom," as the late Prof. E. H. Starling put it, of the body and its cleverness in making the necessary adjustments to enable its tissues to have the freedom which they gain by escaping from the slavery of their surroundings. The idea dates at least from Claude Bernard, and round it Prof. Cannon has now written an essay[1] which we have no hesitation in commending to all who have any interest in the working of the body—physiologists, pathologists, medical men, and biologists in general. He discusses the regulation—"homeostasis" as he calls it—of the fluids of the body, hunger and thirst, reaction, temperature, oxygen supply, the water, sugar, and proteins of the blood, and especially the rôle of the sympathetic-adrenal mechanism which his own investigations have done so much to elucidate. He deals with the physiology of the body as a whole, not the working of organs, and what he says is obviously of importance as much in the ups and downs of normal life and in disease as in the theory of evolution. We can wish that someone brought up on the other side of the invisible boundary between physiology and pathology would write also of his discipline from the same point of view.

DIPHTHERIA CONTROL IN SOUTH AUSTRALIA

In South Australia, Dr. A. R. Southwood[2] points out, the population is almost equally divided between the metropolitan area and the rural districts, and except when diphtheria is very prevalent, as it was in 1921, the incidence is far higher in town than country. In 1921 the metropolitan cases were but slightly more numerous; after that there was a steep fall in incidence among both sections of the population—especially the rural. This decline was maintained until 1931, when some increase took place, particularly in the metropolitan area. Southwood emphasises the great irregularity in the incidence of diphtheria from year to year, and insists that in any estimate of the effects of preventive measures the statistics over at least 10 or 12 years must be reviewed. It seems that in South Australia active immunisation, on any notable scale at least, was only begun in two of the larger towns of the State in June, 1932; hence, no part of this drop in incidence can be ascribed to it. He admits the value and lack of danger of active immunisation carried out with formol-toxoid (anatoxin), but observes that methods of control applicable to densely populated cities may not be altogether suitable to the sparse populations of the country districts of Australia. The medical officer in face of an outbreak in such a district must be guided by circumstances as to which weapon he is to employ. Amongst these, Southwood urges, none is more potent than early clinical recognition of the disease followed by prompt segregation of the sufferer. Such a step may avert an epidemic. But, epidemic prevalence once established, "a large number of atypical cases occur, and many unsuspected carriers are always at large." During epidemic prevalence, as in the control of endemic infectious disease, the isolation hospital, it is now generally allowed, is of no great value as part of the machinery of prevention. Swift recognition and removal of the *first* cases alone enable these institutions to play their original part with success. Southwood says that the public must be impressed with its duties; a child complaining of sore-throat must be kept apart until diphtheria can be excluded by the physician. Immediate contacts should be swabbed. He quotes with approval the scheme for the control of outbreaks of diphtheria in residential institutions worked out by C. C. Okell, A. J. Eagleton, and R. A. O'Brien [3] which, based upon the Schick test, swabbings and virulence tests, permits of rapid handling of the situation.

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[1] The Wisdom of the Body. By W. B. Cannon, M.D., Sc.D., LL.D., Professor of Physiology in Harvard Medical School. London: Kegan Paul, Trench, Trubner and Co. 1932. Pp. 312. With 41 figures. 12*s*. 6*d*.

[2] Med. Jour. Australia, Oct. 29th, p. 535.

Warned perhaps by the increased number of cases which occurred in the State in 1931, after a lull of ten years, Southwood fears that storm may follow calm. Although he thinks that in an inter-epidemic period immunisation may not be necessary, yet, when the disease begins to spread rapidly, it would be wise to protect susceptible children by anatoxin. Effort should be concentrated upon children between 1 and 5 years of age for whom, he thinks, a preliminary Schick test is unnecessary "since most of them are susceptible and it is safe to immunise them all." There can be no two opinions, among those competent to judge, as to the value and safety of immunisation, *but whether or not a preliminary Schick test should* to be performed among those of pre-school age is still a subject for debate. Amongst unsalted rural or semi-rural populations the proportion of positive reactors in children of pre-school age is likely to be high, and the omission of a preliminary Schick test may be dictated by this consideration no less than by expediency. In the case of children of pre-school age living in a crowded industrial city, the proportion of immunes may be notably high, and here the omission or otherwise of a preliminary Schick test may have to be decided by expediency alone. The necessity for simplifying the scheme and reducing the number of attendances at the clinic to a minimum may be considered of more importance than the "immunisation" of some children who are already immune.

Expediency also may be the governing factor in determining whether immunisation should be carried out during epidemic prevalence. As Southwood points out, "when people find the illness actively in their midst they are most likely to heed the advice to have their children immunised." The negative corollary of this attitude applies, unfortunately, not only to diphtheria, but to small-pox also.

ON THE TESTING OF HEARING

It is a difficult matter to find a standard by which to measure and record the acuity of hearing and the ratio of the perception of sound by air and bone conduction. A special committee was therefore appointed in January, 1929, by the section of otology of the Royal Society of Medicine to consider various tests of hearing, and this committee has now issued its report.[4] The greater part of its labours has been directed to the use of tuning-forks, as the only efficient method at present known of estimating bone conduction, and these are also recommended for use as the principal method of testing the hearing acuity for air-borne sound. The committee finds that audiometers, as at present manufactured, are scientifically accurate oscillometers, but fail in their application to clinical otology for a variety of reasons. If they are fitted with telephone receivers, these exert different degrees of pressure on the ears, may displace the tragus, allow leakage of sound, or cause error through conduction by the cartilage; on the other hand, if audiometers are used with a loud-speaker in an ordinary room, errors result from reflection of sound-waves. This conclusion does not dispute the use of the audiometer for the detection of deafness in school-children, for which purpose it has been widely adopted, with official sanction [5]; it is a valuable instrument for such preliminary testing, although not sufficiently accurate for consulting-room work.

The committee recommended that the result obtained by testing air and bone conduction by means of tuning-forks should be plotted on a graph; but we hope that the type of audiograph suggested may later be improved and simplified, for it is not easy to understand in its present form. It has been customary to test the degree of deafness by measuring the time that the fork is audible to the normal observer after it has ceased to be heard by the deaf patient, and this is the method recommended; but the committee was faced from the outset by the difficulty that the rate of decay of the vibrations varies enormously with different forks; this rate is estimated by the "half-intensity period" of the fork—that is, by the number of seconds required for the amplitude of vibration to fade by one-half. This period should be between three and ten seconds. In collaboration with the National Physical Laboratory and with the manufacturers, standard forks have been produced, and will shortly be placed on the market; on each fork are engraved its half-intensity period when suspended in air, and when its base is applied to the mastoid, and the relative intensity of the sound transmitted by the prongs and by the base, which is termed the "characteristic" of the fork. When the results of tests with such forks are expressed in half-intensity units, instead of in seconds, the figures so obtained are strictly comparable, though made by different observers and with different forks. This represents a definite scientific advance in the accuracy of testing and recording degrees of deafness, and British otology may well be proud of having given a lead to the world on this difficult subject. The report is amplified by appendices on estimation of the high tone limit, on auditory fatigue, on the use of tuning-forks, on the physics involved, and on audiography; it is carefully written, reflects great credit on the committee, and deserves the attention of all otologists.

PNEUMONIA IN THE STEEL INDUSTRY

The Occupational Mortality Supplement, 1921–23, of the Registrar-General for England and Wales shows that among occupations with an excessive death-rate from pneumonia various groups of workers in the iron and steel industry occupy a conspicuous place. For instance, the comparative mortality figure of puddlers from pneumonia is exceeded by only six out of the 178 occupation groups. The work involved is mainly heavy (and thus a good physical type of recruit is no doubt required) and it involves considerable and probably trying changes of temperature. Some further evidence of this occupational risk was provided in one of the earliest reports of the Industrial Health Research Board,[6] in which Dr. H. M. Vernon included an analysis of the sickness records of about 20,000 steel workers. He found some excess of lost time amongst the men frequently working at high temperatures, but his figures did not permit any fine analysis of cause or causation. A further study has recently been made, for the United States Public Health Service, by Dean K. Brundage and J. J. Bloomfield,[7] and an attempt made to isolate the factors responsible for the high incidence of pneumonia again found. Factors apart from working conditions, such as seasonal variation in the frequency of pneumonia, influenza epidemics, economic status of the workers, their age, nationality, extent of addiction to alcoholic stimulants, and prevalence of the disease in the general community were all considered and found to be of insufficient influence. A calculation of the frequency of pneumonia according to the nature of exposure shows very high rates amongst the men obliged to work out of doors during inclement weather (13·6 per 1000) and for those subjected to heat with wide changes in temperature without significant exposure to any other kind of industrial health hazard (12·6 per 1000), in contrast with a rate of 3·9 cases annually per 1000 exposed to none of the working conditions held to be hazardous. Sudden cooling or chilling of the body the authors believe to be an important predisposing factor, and the importance of its avoidance should be stressed amongst the men, for whom change-houses should be adequately provided. Some of the occupational groups here dealt with are too small to be of real service, but the report represents a careful attempt to reach statistically sound conclusions, though in investigations of industrial hazards it is notoriously difficult to be certain that all extraneous factors have been effectively isolated. This report, however, is but a preliminary, for the full study is to be presented in Public Health Bulletin No. 202, which is still in the press.

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[3] THE LANCET, 1924, i., 800.

[4] Longmans, Green and Co. 1932. Pp. 33. 2*s.* 6*d.*

[5] See THE LANCET, 1932, ii., 1347.

[6] Industrial Health Research Board. Report No. 5. Fatigue and Efficiency in the Iron and Steel Industry. H.M. Stationery Office, 1920.

ANIMALS AS A RESPONSIBILITY

OUR responsibility towards animals is recognised by all, and the State has legislated widely on their behalf. In his Alexander Pedler lecture[8] for 1932, Sir Frederick Hobday, principal of the Royal Veterinary College, showed the reverse of the shield; we are not, he said, equally alive to the responsibilities towards ourselves which this contact with animals imposes, and we are insufficiently protected against the dangers it creates. Glanders and rabies have been eradicated in this country and are not likely to recur so long as the present preventive legislation is obeyed. He holds also that the timely application of the right methods has done much to stamp out foot-and-mouth disease and anthrax. But the figures he gave for bovine tuberculosis, though familiar, remain remarkable. The average proportion of tuberculous cattle in the dairy herds of Great Britain works out, he believes, at between 30 per cent. and 40 per cent., and in some cases is as much as 60 per cent.; in all there are probably over a million infected cattle. Prof. Hobday quoted figures showing that not only do between 3000 and 4000 children under 5 years die of tuberculosis caught from the cow, but some 45,000 people suffer annually from joint affections the results of bovine tuberculosis with which they have been infected early in life. The consumption of meat also entails danger if, as in England, the animals can be slaughtered at private abattoirs which are often quite unsuitable. The rest of Europe is far ahead of us in this respect, for only in England are animals killed for food which have not been inspected by qualified veterinary surgeons. This country has, as he says, been far behind foreign countries in the governmental support of veterinary research, and Prof. Hobday's lecture lends force to his appeal for donations for the rebuilding and endowment of the Royal Veterinary College.

ZOSTER VIRUS AND BELL'S PALSY

IT is now some 26 years since Ramsay Hunt put forward the view that certain cases of facial paralysis —those associated with a vesicular eruption in the sensory area of the seventh nerve—were due to the zoster virus. And although this syndrome has been recognised and generally accepted, experimental evidence in support of it has been lacking. Elsewhere in this issue, Dr. R. S. Aitken and Dr. R. T. Brain show that cases of the Ramsay Hunt syndrome possess specific zoster antibody in their blood; Hunt's thesis appears to have been correct. But apart from the interest attaching to this demonstration that a proportion of cases of facial paralysis are due to the zoster virus, Aitken and Brain's work has another significance. Quite a number of the filtrable viruses are only capable of attacking a limited number of animal species. Sometimes one species alone is susceptible and this seems to be so with the virus of zoster. Where man is the susceptible species the direct method of experimentation is often precluded, and one has to fall back on indirect means—histological, morphological, and immunological—to provide a solution to our problems. The studies of Netter and his colleagues demonstrating the unity of the clinical group of zoster and the relationship of the zoster and varicella viruses is a good example in point; the work of Aitken and Brain is another.

BROMPTON HOSPITAL REPORTS

WE welcome the appearance of the first number of this new publication, which contains a collection of papers written by members of the honorary staff of the Brompton Hospital for Consumption and Diseases of the Chest and by others working in its various departments. In these days when medical journals, dealing with every ramification of our science, have multiplied to so great an extent that it is difficult for any investigator to keep abreast with all the materials necessary for his work, it is convenient to have a series of papers dealing with a particular branch of medicine brought together into a single volume. The articles here republished indicate that the research department of the hospital is doing useful work. The incidence of tuberculosis upon children has been especially studied, but there emerges, as what may be called a by-product of the investigation by radiological methods, that there are many instances of alterations in the structure of the lungs in children, visible by X rays, which are not due to the tubercle bacillus, and a paper by Dr. F. H. Young deals with the problem of these conditions from a clinical point of view. It would seem that sanocrysin, though far from fulfilling the hopes held out at its introduction, has yet established itself as a useful adjuvant in the treatment of tuberculosis, and a contribution to our knowledge of its mode of action is here made by Dr. E. E. Atkin, who studied its anti-allergic effects in animals inoculated with dead cultures of tubercle bacilli and found a definite inhibition of the formation of tubercles. We hope that future numbers of these reports may be furnished with an alphabetical index to facilitate reference.

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[7] Jour. Indust. Hyg., December, 1932, p. 345.

[8] Animals as a National Responsibility. The Alexander Pedler lecture of the British Science Guild, delivered under the auspices of the Burton-on-Trent Natural History and Archæological Society, by Prof. F. T. G. Hobday, F.R.C.V.S. Obtainable from the Guild, 6, John-street, Adelphi, London, W.C.2, at 1s.

SPECIAL ARTICLES

NEW WORK ON HORMONES*

BY PROF. W. SCHOELLER
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DURING the last few decades research workers have been endeavouring to find out how far the regulation of the female sexual cycle is dependent upon the influence of hormones. It can now be taken as definitely proved that the ripening follicle produces a hormone, or rather a group of closely related chemical compounds, to which we give the name of follicular hormone. The chief function of this hormone is to stimulate the development of the secondary sex organs of the female, such as the uterus, vagina, and mammæ. When the follicle becomes modified to form a corpus luteum the latter generates another hormone which was obtained in concentrated form by Corner[1] in 1929, and the main purpose of which is to stimulate the uterus, which has proliferated under the influence of the follicular hormone, to prepare a decidua suitable for the nidation of an ovum.

These processes occurring in the mature ovary have been shown by Evans[2] to be dependent upon the secretory activity of the anterior lobe of the pituitary body. We are indebted to Aschheim and Zondek[3] for showing that a substance is found in the urine of pregnant warm-blooded animals which is either identical or closely related chemically with the gonadotropic hormone of the pituitary.

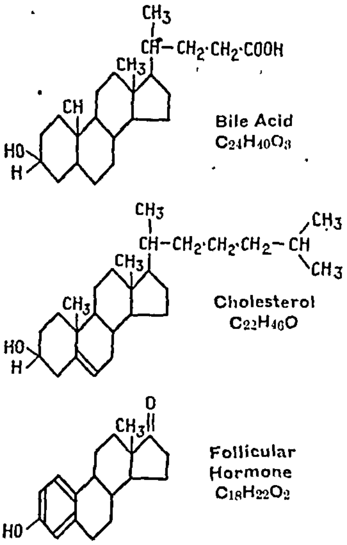
The discovery of the follicular hormone was made possible by the test method elaborated by Allen and Doisy.[4] This method depends upon the cyclical changes occurring in the vaginal secretion of rodents which were observed (1917) by Stockard and Papanicolaou[5] and later (1922) by Long and Evans.[6] By the administration of follicular hormone to castrated female mice and rats it is possible to produce an artificial œstral cycle and during the height of œstrus non-nucleated, horny epithelial cells appear in the vaginal secretions. The occurrence of these is used to standardise the hormone in terms of rat or mouse units. In the normal mature woman only some 100 mouse units of follicular hormone are demonstrable in each litre of urine, but during the later months of pregnancy up to 10,000 units per litre are excreted. The urine of mares in late pregnancy may contain 100,000 or more units per litre.[7]

THE FOLLICULAR HORMONE

The abundant supply of follicular hormone thus available has greatly facilitated its isolation and has made it possible for organic chemists to get busy at clearing up the chemical constitution of this important hormone. First came the classical researches of Butenandt (Göttingen) along with those of Doisy (St. Louis) and Marrian (London). In 1929 *Doisy and Butenandt, working independently,* were able to prepare the hormone in pure crystalline form. According to Butenandt,[8] the hormone has the formula $C_{18}H_{22}O_2$ and is a partially hydrated phenanthren derivative, one of the oxyketones. The phenanthren ring appears to be joined to a pentagonal ring system. Its constitution thus seems to be very similar to that recently demonstrated for the sterols and biliary acids.

The follicular hormone occurs in several isomeric forms, which differ in their activity. α-follicular hormone has, according to Butenandt,[8] an activity of 10-million mouse units per gramme, while the β form contains only 1½ million units. A third highly active isomer was recently described by *Schwenk and Hildebrandt.*[9] *Marrian*[10] was able to isolate a compound closely related to the hormone but containing more oxygen, the so-called follicular hormone hydroxide with the formula $C_{18}H_{24}O_3$, which Butenandt[8] was able to reconvert into the α and β forms of the hormone by splitting off water. In the hydroxide the three oxygen atoms are present as hydroxyl groups, one of which has the characteristics of a phenol. The substance has an activity of only 75,000 mouse units per gramme. Recently Girard and his co-workers[11] have reported upon two further isomers closely related to the follicular hormone, equilin and hippulin, which they extracted from mare's urine. Further, Laqueur[12] and Marrian[13] were also able to isolate further products, the constitution of which has not yet been determined.

FIG. 1



Graphic formulas of the follicular hormone and some chemical allies.

We do not know whether all these variants are necessary for the female sexual cycle, each carrying out part of the function, or if they are derivatives of the hormone proper metabolised perhaps for the purposes of excretion. This chemical complexity puts obstacles in the way of gynæcologists who have sought to determine the functional capacity of the ovary by estimating the amount of hormone in mouse units excreted in the urine. For example, if the α hormone is converted into hydroxide for the purpose of excretion this would produce a drop in the number of mouse units from 8–10 millions to 75,000 or so, and the investigator would thus be led to underestimate the output of the ovary.

The occurrence of the follicular hormone is not restricted to the animal kingdom. From the work of Loewe,[14] Dohrn,[15] and others we know that it also occurs in plants as, e.g., in germinating grain. This observation is particularly valuable since it shows a new link between the animal and vegetable kingdoms. Relevant hereto are Aschheim's[16] brilliant findings; in association with Hohlweg, he was able to prepare an oil containing the hormone from peat, coal, and petroleum. It is astounding that follicular hormone originating from plant or animal material should have remained undecomposed during the æons required for the formation of mineral coal or petroleum. According to estimates based upon amount and character of radio-active decomposition products, the age of Westphalian coal is estimated at 120 million years, and from it these workers were able to isolate a crude hormone oil containing some 3000 mouse units. When one considers how much coal is burnt yearly to obtain heat and energy it will be seen that the quantity of follicular hormone which is destroyed at the same time must amount to thousands of kilos.

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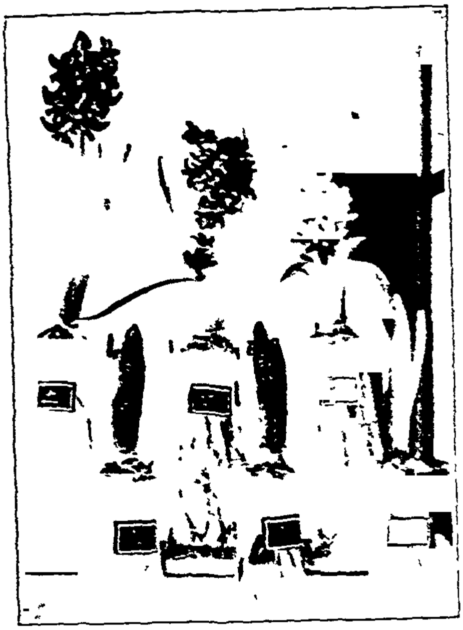
* Based on a paper in the Deutsche med. Wochenschrift, 1932, No. 39. Published by Georg Thieme, Leipzig.

FIG. 2



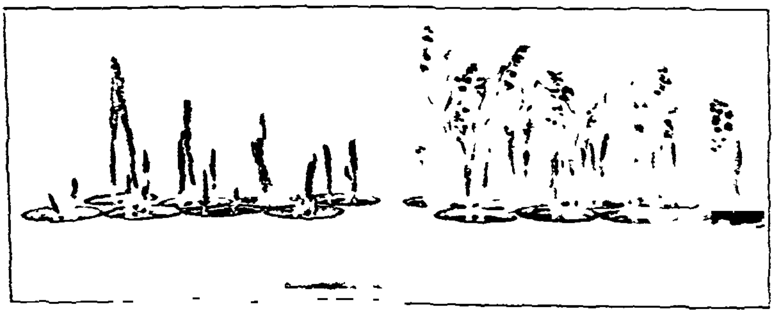
Above, three hyacinths growing in water to which was added over a period of six weeks 200 mouse units of progynon (œstrin). Below, three controls.

PLANT HORMONES

The action of the follicular hormone is not restricted to animals. Experiments of Schoeller and Goebel[17] have shown that the supply of small quantities of this hormone may accelerate the flowering of certain plants—e.g., hyacinths, arum lilies, and lilies of the valley. This work contained the first proof that the principle of hormone action established for animals evidently holds good also for plants. It opens up the questions vital to plant physiology; where are such substances produced and what other functions of plants are under hormonal control?

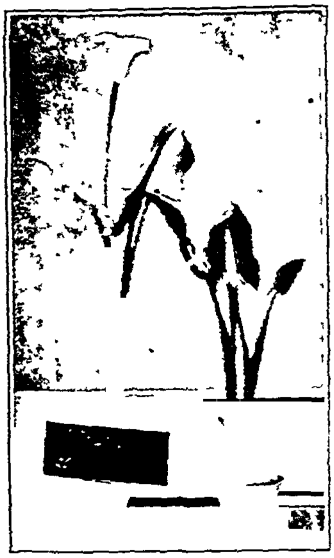
From this point of view the work of Went and Kögl (Utrecht) is worthy of close attention. The classical work of Went[18] on the decapitated Avena shoot has shown that phototropism (turning of plants towards the light) and *geotropism* (reaction of plants to gravity) are due to a chemical substance. This substance has the power of expanding plant cells and as it accumulates on the shady side in the one case or in the direction of gravity in the other it distends the cells and causes rotation of the plant. Recently Kögl[19] was successful in isolating this hormone, which he called auxin, in pure crystalline form. Its formula is $C_{18}H_{32}O_5$ and its chemical structure that of a trioxycarbonic acid. It is a remarkable fact that auxin also occurs in warm-blooded animals, but in them nothing is known of its action, other than that it is excreted in the urine. Through this work some insight is gained into two further secrets of plant life, and it remains to be seen whether leaf and root formation are also due to the stimulus of a hormone.

FIG. 3



On the right, lilies of the valley, which after supply of 300 mouse units of progynon (œstrin) weekly are vigorously flowering, compared with controls on the left.

FIG. 4



On the left, arum lily flowering under the influence of crystallized progynon (œstrin), and again a second time after the first flower withered, when further hormone was supplied. On the right a control.

THE CORPUS LUTEUM HORMONE

As was mentioned at the outset the presence of a second hormone, which is found in the corpus luteum, is essential to the female cycle. The fact that the corpus luteum exercises an endocrine function was shown by the work of Fränkel,[20] Buin and Ancel,[21] and Hammond and Marshall.[22] It was however Corner and Allen[1] who first obtained active extracts of the hormone and were able to maintain pregnancy after castration by their use. In Germany, Clauberg,[23] and in Austria, Knaus[24] have studied the effect of this hormone, while Fels and Slotta[25] claim to have isolated it in crystalline form.

According to Steinach and Kun,[26] the corpus luteum also produces the male hormone so that during the fourth week of the intermenstrual period, and in the early months of pregnancy, a woman is apparently bi-sexual. Corresponding with this observation, Womack and Koch[27] found male hormone in the urine of both normal and pregnant women and conversely, according to Dingemanse and Laqueur,[28] follicular hormone can be isolated from male urine.

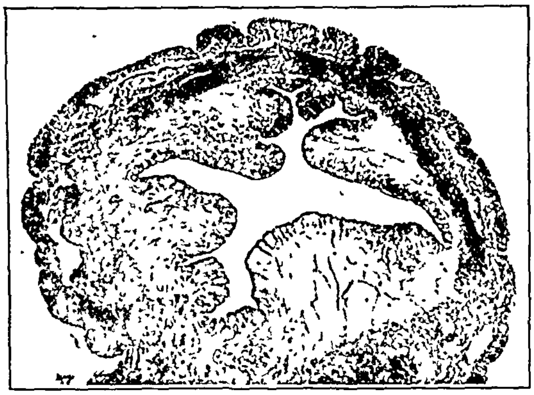
That the sexual cycle of women demands a reasonable supply of both these hormones, follicular and corpus luteum, was recently demonstrated by Kaufmann.[29] Injections of 320,000 mouse units of *a follicular hormone derivative (progynonester) in the* course of 18 days, followed by injections of 90 rat units of corpus luteum hormone in a woman castrated some years before, caused bleeding of four days' duration. In this menstrual blood he was able to demonstrate under the microscope elements of decidua; the atrophied uterus had proliferated so far as to develop under the influence of the corpus *luteum hormone a real secretory phase.*

THE MALE HORMONE

The story of the male sex hormone begins with the experiments made by Berthold [30] (Gottingen) in 1849 on the growth of the comb in capons into which he implanted testicles from sexually mature cocks. Although he drew the correct conclusion that the blood of the capons must have become altered in such a way as to allow their combs to grow again, neither he nor his contemporaries carried this very valuable observation any further. The famous experiments of Brown-Séquard [31] upon himself, which he presented *to the Paris Academy 40* years later, also remained inconclusive. We owe it to the untiring efforts of the Chicago workers, Koch, Moore, and Gallagher [32] that crude extracts of bovine testicle were so far purified as to produce an effect on the combs of capons. Casimir Funk [33] is to be credited with the proof that the male hormone is excreted in the male urine, and can be prepared from it. Laqueur [34], and his school have made a valuable contribution to the standardisation of the hormone by devising the method whereby the shadow of the comb is reproduced on photographic paper and measured planimetrically.

A second test devised (1930) by Loewe and Voss [35] is based on the work of Steinach and the American school on the effect of male sex hormone on the secondary sex characteristics of castrated male rodents. The hormone is capable of producing externally visible regeneration of the atrophied seminal vesicles of castrates, corresponding in degree to the amount of hormone administered. Loewe observes the histological changes which precede this process. In the same way the hormone causes regeneration of the prostate, penis, and vas deferens of castrates

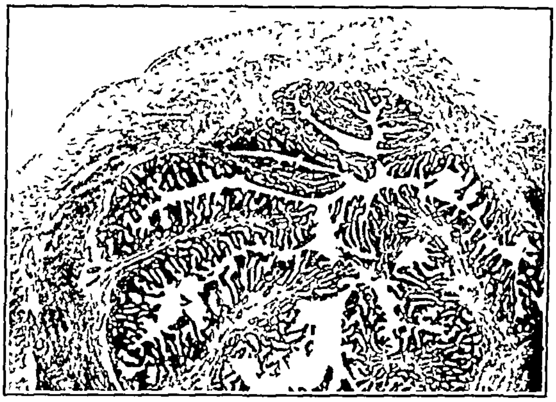
FIG. 5



Proliferation of the uterus of a castrated rabbit after treatment with 105 mouse units of progynon (œstrin).

Again it was Butenandt [36] who was the first (1931) to prepare the male sex hormone in pure crystalline form from a hormone oil prepared according to a process devised by Schoeller and Gehrke [37] and supplied to him by Schering-Kahlbaum, A.G. The hormone has the formula $C_{16}H_{26}O_2$. It is also an oxyketone, but its hydroxyl group has the character of a secondary alcohol and not that of a phenol. It must be considered as a saturated system; whether it also belongs to the class of phenanthren derivatives, and is therefore closely related chemically to the female sex hormone, remains to be seen.

FIG. 6



Transformation of mucosa into decidua under the influence of corpus luteum hormone (Schering). Observation of Clauberg.

Further, it is not yet known whether the male sex gland produces one hormone only, or whether *its several effects are produced by different, even* though closely related, components.

ANTERIOR PITUITARY HORMONE AND THE SEXUAL CENTRE

Controlling both male and female genital glands there is the gonadotropic hormone of the anterior lobe of the pituitary, the action of which has been described in the works of Evans, Engle, Smith, Steinach,[38] Aschheim and Zondek.[39] Whether it is identical with prolan isolated by Aschheim and Zondek, obtained from pregnant urine, has not yet been definitely established. These workers have been led to believe that two separate components, prolan A and prolan B, are essential for the control of the ovarian cycle: A for the production of mature follicles, B for luteinisation. Neither the preparation of these two components in pure form nor their separation has yet been accomplished. The abundant excretion of prolan in the early days of pregnancy is the basis of the well-known Aschheim-Zondek reaction.

The study of the reaction of the gonads on the hypophysis has produced interesting results. Fichera [40] and other authors noted under the microscope, in the anterior lobe of the pituitary after castration, the appearance of large clear cells, the nuclei of which contain little chromatin, the so-called castration cells. Evans and Simpson [41] were able by means of implantation experiments to show an increased action on the gonads parallel to this histological change. Finally, Hohlweg and Dohrn [42] demonstrated *that this reaction of castration on the* hypophysis could be completely annulled by administration of sex hormone, a method which enabled them to estimate the production of hormone by the gonads of young warm-blooded animals (rats).

The reaction of the sex hormone on the hypophysis is, according to Hohlweg and Junkmann,[43] not a direct one, since in rats, in which a second hypophysis had been implanted in the kidney, castration produced the characteristic changes only in the hypophysis which was normally situated. The appearance of these changes must therefore depend upon nervous influences which can only reach the animal's own hypophysis. This fact leads Hohlweg and Junkmann to assume the existence of a sexual centre, the site of which, from observations made by Teel and Cushing[44] on deficiency symptoms due to tumours, is probably in the floor of the third ventricle. If this is so the self-regulating control of the gonads may be expressed in some such scheme as Fig. 7.

This scheme explains also the valuable observation of Philipp[45] that the anterior pituitary lobe of pregnant women contains extraordinarily little gonadotropic hormone. Philipp assumes that during pregnancy prolan is elaborated in the chorionic portion of the placenta. Whether the gonadotropic hormone of the anterior pituitary is chemically identical with the prolan produced in the chorion is, as Freud[46] (Amsterdam) has very properly emphasised, not yet known, in spite of the great similarity in their action.

In a similar way, for the purpose of future experiments, it may be taken as a working hypothesis that the luteinising principle, necessary for the control of the female sex cycle, is not produced in the hypophysis but depends upon hormonal influence on the part of the ovum. Thus, if the unfertilised ovum dies in the normal way, the corpus luteum also perishes within a short time, whereas if, on the other hand, the ovum is fertilised and nidation takes place, the corpus luteum persists until the embryo has become independent. Again, according to this hypothesis, metropathies would be explained as the result of a lack of functionally active mature ova.

FIG. 8

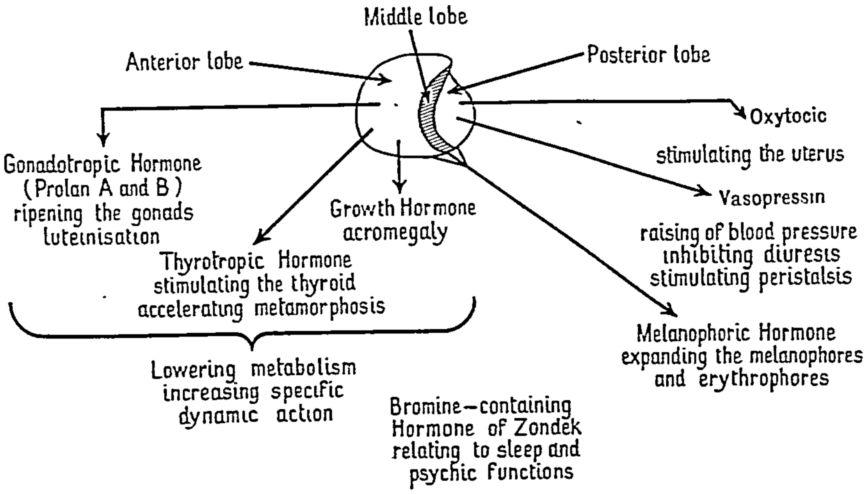
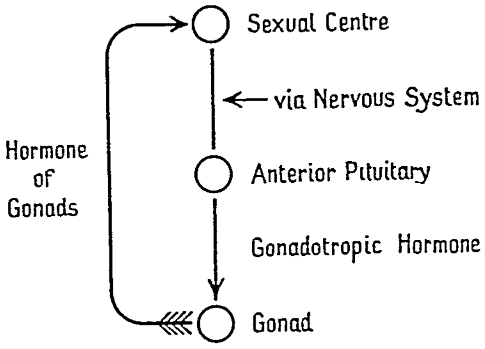


Diagram of collective function of pituitary.

THE THYROTROPIC HORMONE

While the gonadotropic hormone of the anterior pituitary has the function of stimulating the activity of the gonads, its thyrotropic hormone exercises a similar effect on the thyroid. The work of Loeb,[47] Aron,[48] Jansen and Loeser[49] has shown that this hormone can eliminate colloid from the thyroid and stimulate the follicular epithelium. According to Junkmann and Schoeller[50] the hormone may be conveniently standardised by means of the thyroid of the young guinea-pig. Apparently the hormone can also produce the transformation of the axolotl. Its effect presumably is to raise the level of thyroxin in the blood. This also explains the heightened basal metabolism and the reduction of the glycogen content in the liver. Schittenhelm,[51] experimenting with large doses on voluntary patients, was able to produce early symptoms of Basedow's disease which then rapidly subsided.

FIG. 7



Scheme of self-regulating control.

With the help of its gonadotropic hormone the anterior lobe of the pituitary stimulates the gonads to produce the specific sex hormone, the function of which is to develop and maintain the secondary sex characteristics. The sex hormones circulating in the blood act on the sexual centre which, according to whether the level of sex hormone in the blood is above or below normal, inhibits or stimulates the further production of the gonadotropic factor.

From the chemical standpoint the thyrotropic hormone belongs, together with the gonadotropic hormone and insulin, to the class of hormone which is closely related to the proteins. They undergo digestion and are therefore inactive when given by the mouth; further they are more or less sensitive to heat and to hydrolysing agents. They are for the most part soluble in water, slightly soluble or insoluble in organic solvents.

Our present knowledge of the collective function of the hypophysis may be expressed in a diagram (Fig. 8).

The purpose of this summary of recent researches on hormones is to enable those who are not specialists in this field to study the original publication in this or that branch of the subject.

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OUT-PATIENT DEPARTMENTS

THEIR USE AND ABUSE

In January last the Prince of Wales, as president of King Edward's Hospital Fund, appointed a special committee "to inquire into and report upon the methods in use in the London voluntary hospitals regarding the attendance of patients in the out-patient and casualty departments, and the effect of those methods upon the suitability of the patients treated and on the length of time during which patients wait before or after treatment." This committee has now issued a report,[1] which includes a historical survey of the out-patient department, a review of the present position, and a general description of procedure, as well as a full discussion of the committee's terms of reference.

The report points out, in the first place, that the question of suitability falls into two parts—medical and financial—and that the out-patient department proper must be considered separately from the casualty department. Secondly, it stresses the gradual change that has come over the out-patient departments of voluntary hospitals, which were originally places for the simple treatment of the sick-poor, but are now available to members of contributory schemes and to patients who pay a moderate fee, and which provide every year an increasing amount of complex service and treatment which is not available elsewhere at a reasonable charge.

The committee has no doubt that the hospitals maintain their popularity, and all the evidence confirmed the statement that they had the confidence of the working-class population. The annual attendances at the twelve teaching hospitals have increased from two and a half million in 1911 to nearly four million in 1931. There was, however, a drop in the number of medical patients after the passing of the National Health Insurance Act, and this has not been made up, although the figure has been rising since 1917. The surgical figures were not affected by the Act. The discrepancy between patients and attendances since 1911 and the increase in medical patients since 1917 probably reflect the increasing number of complex diagnostic measures which require hospital attendance, and of special treatments that need repeated visits, as well as a rise in the average seriousness of the hospital medical case. Very few complaints have been received from patients, and these were mostly concerned with waiting and overcrowding, and not with any inefficiency or inadequacy of service. The committee realises, however, that there is no channel for complaints and thinks it important that there should be one.

TIME OF WAITING

There seems to be no doubt, despite the vagueness of some of the evidence, that patients do have to waste a good deal of time in out-patient departments, though not in casualty departments or special departments, except those for eye and ear.

Four chief theories of the cause of delay have been put forward to the committee. One regards waiting as inevitable and only to be obviated by quite impracticable increases in staff and accommodation; another puts it down to overcrowding and thinks that it could be remedied by improvements in accommodation; a third ascribes it to remediable defects in procedure; and a fourth to unsatisfactory selection of patients, many being sent to the consultant when they could properly be treated elsewhere. There are hospitals which still maintain that their doors must always be open to all-comers, and there are others who will admit only patients bearing a letter from a medical man. On the whole, hospitals are tending more and more towards the latter extreme, and emphasising the consultative nature of the service they offer. The British Medical Association has suggested that doctors' letters should be compulsory except in cases of emergency. The committee is not able to accept this view, although it supports the movement towards the more consultative use of the out-patient department. It thinks that patients who cannot pay a consultant fee and who

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[1] King Edward's Hospital Fund for London. Report of the Committee appointed to inquire into Out-patient Methods at London Voluntary Hospitals as affecting suitability of patients and time of waiting. London. 1932. Pp. 76. 1*s.* 6*d.*

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want a second opinion should be able to get one at a hospital without having to obtain a letter from a general practitioner; they may be shy of asking him, or they may not be in touch with a doctor; and the doctor is by no means necessarily the best person to decide whether or not a hospital opinion is desirable.

THE "MINOR AILMENT" CASE

An undoubted cause of overcrowding and consequent waiting is, in the opinion of the committee, the treatment of large numbers of "minor" cases, and the question of alternative provision for these is therefore a very pertinent one. It is bound up to some extent with the problem of financial suitability. Some hospitals feel that a patient who is so poor that he cannot obtain the necessaries of life or pay the smallest fee is not likely to benefit from treatment, and had better be dealt with by the public assistance authority, which can supply both medical treatment and any form of relief required to make it effective. Other hospitals hold to the older idea that they were founded for the treatment of the sick-poor and must turn no one away. A far larger class comes within the "income range" established by the hospitals and could, in the opinion of the British Medical Association, afford to pay general practitioners for treatment for these minor ailments or could obtain what they need by means of an insurance or provident dispensary scheme. There is yet a third class with incomes above the range of public assistance who yet find a general practitioner's fees a severe charge on their incomes. Nevertheless, when all exceptions have been excluded, there remains, in the opinion of the committee, a very considerable number of patients attending hospitals for minor complaints which could properly be treated elsewhere. The report discusses at some length the alternative provision available for these people.

In so far as they are not treated by the consultants personally, they must be referred either to general practitioners or to the junior staff of the hospital. Some authorities argue that the junior staff are more up to date and efficient than the general practitioners; others that they lack the breadth of view and experience of the man outside. While not feeling called upon to express an opinion on the merits of the practitioner, the committee points out that treatment of minor ailments by the junior staff will not greatly assist the problem under consideration: overcrowding of the hospital. The report therefore urges greater coöperation between hospitals and practitioners—for the benefit of both.

Besides private practitioners, there are provident dispensaries, public medical services, charitable dispensaries, voluntary and public clinics, public assistance provision, and nursing services. All of these could play their part in relieving hospital congestion, and the committee stresses the importance of coöperation with them all. It further recommends that hospitals should do all they can to let doctors know the hours of the various consultants, so that patients are not sent up with personal letters on the wrong days, and to send reports on cases, while doctors should supply adequate case-notes when sending their patients to hospital. A vicious circle is very apt to develop, and goodwill and a realisation of the value of each to the other is necessary if practitioners and hospitals are to make the best possible use of each other for the best service of their patients. Against the additional work required for coöperation might be set the reduction in numbers. The more competent and experienced the doctor who does the sifting, the less the likelihood of mistake or dissatisfaction. Sifting takes time, but the time is probably saved in other departments. The problem of minor cases cannot be considered without reference to the needs of the medical student, but the committee is of opinion that, although the minor case is necessary for education, great reduction in the present numbers could be effected without harming the teaching work.

DELAY DUE TO PROCEDURE AND LACK OF ACCOMMODATION

The report discusses carefully the various procedures by which out-patients are received, registered, and interviewed, but is unable, amidst the diversity, to pronounce a judgment on the best method. It desires further records of time-counts showing how long each way takes, and advises all hospitals to consider whether changes in procedure might not accelerate the service. Time may be saved by arranging special sessions for special classes of patient—e.g., discharged in-patients, young people between 14 and 16, and so on. The appointments system has been warmly defended by some hospitals, whether the appointment be given to individuals or to groups, and the committee feels that this possibility demands attention. Some hospitals limit the number of patients that may be seen at a session, and others offer a number of improvements in general organisation that the committee recommends to the consideration of those who have not adopted them already. Even if the time of waiting is not reduced thereby, the grumbling at it may be effectually stopped by seeing that the waiting-hall is warm and comfortable and that refreshments are available.

Waiting time is certainly reduced by the provision of adequate dressing rooms and examination rooms, and by the existence of suitable special accommodation for special departments. Time is saved if patients do not have to traverse long corridors from one room to another.

THE COMMITTEE'S CONCLUSIONS

In summary, therefore, the chief conclusion of the committee is that the out-patient problem can be materially reduced by sifting out a large proportion (but not all) of the minor cases and arranging for their treatment elsewhere than in the consultant's room. The hospital should be prepared to use to the utmost all coördinated services to which patients can be referred, and should particularly endeavour to satisfy the requirements of the general practitioner who, in his turn, should do all in his power to use and accelerate the service the hospital can render him. The committee thinks the present movement towards a more consultative service is a movement in the right direction, but does not recommend carrying it to the extreme of excluding patients who desire a second opinion and cannot afford it privately. It views with favour the proposal to supply both practitioners and consultants with standard forms to send with the patients. Every hospital, it considers, should study the procedure in use at other hospitals and consider whether there is not room for improvement in its own routine. The King's Fund is advised to see how it can help the hospitals to carry out the committee's recommendations.

NORTHAMPTON GENERAL HOSPITAL.—The report for 1932 shows 4629 in-patients, an increase of 422 on last year; of these 1772 were accidents and emergencies. Average stay, 18 days, cost £7 14*s.* 5*d.*, and cost per bed per day 8*s.* 10*d.*—small reductions under each head. Out-patients exceeded 19,000, an increase of more than 800, who cost 7*s.* 2*d.* each. Ordinary income £43,143, expenditure £44,278.

THE VALUE OF MASSIVE RADIATION

FINAL REPORT OF THE CONFERENCE ON RADIUM

THIS Conference owed its origin to doubts publicly expressed as to the soundness of the decision of the Radium Commission to withdraw the 4-gramme bomb, then in use for massive radiation at the Westminster Hospital, and subdivide it into four units of 1 gramme each. It consisted of the following members :—

Lord Dawson of Penn, President of the Royal College of Physicians of London, in the chair.

Lord Moynihan—now succeeded by Sir Holburt Waring—President of the Royal College of Surgeons of England.

Mr. Wilfred Trotter, representing the Medical Research Council.

Sir Frederick Menzies, Chief Medical Officer, L.C.C.

Dr. Watts Eden, President of the Royal Society of Medicine.

Mr. H. S. Souttar, representing the B.M.A.

Prof. Arthur Hall, Mr. Ernest Miles, and Prof. Woodburn Morison, representing the Radium Commission.

INTERIM REPORT

In an interim report, dated March 4th, 1932,[1] the Conference decided unanimously :—

(1) That the Radium Commission arrived at a sound conclusion in discontinuing the use of the 4-gramme bomb at the present juncture, though this decision is without prejudice to the question of the therapeutic value of 4 gramme or even larger aggregations of radium.

(2) That in the opinion of this Conference a fully equipped radium institute is needed in London, where the more difficult and speculative problems connected with radium and ray therapy can be studied by the combined efforts of a trained staff.

The Conference appointed a technical committee as follows :—

Chairman.—Mr. H. S. Souttar.

Physics.—Lord Rayleigh, F.R.S., Prof. J. C. M'Lennan, F.R.S.

Radiotherapy and Medicine.—Dr. Roy Ward, Radium Institute; Dr. G. F. Stebbing, Lambeth Hospital, L.C.C.; Dr. B. W. Windeyer, Middlesex Hospital.

Surgery.—Mr. Cecil Rowntree, Cancer Hospital; Mr. Geoffrey Keynes, St. Bartholomew's Hospital.

Gynæcology.—Mr. Louis Rivett, Middlesex Hospital; Dr. Elizabeth Hurdon, Marie Curie Hospital.

Experimental Radiation.—Dr. W. Cramer, Imperial Cancer Research Fund Laboratory.

Representatives of the Conference.—Lord Dawson and Lord Moynihan.

FINAL REPORT

This committee reported finally on Dec. 19th, 1932. After considering their findings, which are set out below, the Conference has issued a short statement which runs :—

"It is clear that there is a field of usefulness for radiation from massive units of radium, given an adequate equipment and men and means. We adopt the view of our technical committee that it is desirable that a radium unit containing not less than 5 grammes of radium element should be established.

"An institute specially constructed for the purposes of such radiotherapy and within easy reach of the future Post-graduate School and Hospital is an ideal to be aimed at, but for the moment it may be impracticable upon financial grounds. It would, however, be feasible to organise existing institutions for the time being, provided they were near enough to each other for efficient coöperation. The amount of radium required for a large unit might mean that the allotment of radium by the Radium Commission would need to be further concentrated.

"Both X ray and radium therapy are at present advancing so rapidly that it is impossible to decide the position which each will occupy in the future. The whole field is one for the fullest investigation, and it is one in which results of the first importance have already been obtained.

"In drawing up this report," which is signed by Lord Dawson, "the Conference has purposely refrained from considering the relative places occupied by surgery and radiotherapy in the treatment of malignant disease."

Two Questions Submitted to the Technical Committee

The technical committee were asked for a reply to these questions :—

1. What is the scientific case for mass radiation by radium, and what are the advantages and dangers attaching to the use of such radiation ?
2. What are the advantages and risks of massive surface radiation by radium compared with those of radium needles and radon seeds ?

Their report, which is a reply to the questions, is as follows :—

Selective action of radiation upon malignant cells.—The use of radium in the treatment of malignant tumours depends upon the empirical observation that in a large number of instances the cells of malignant tumours are destroyed by an amount of radiation insufficient to destroy the normal tissue. This proposition is generally true over a very large range of wave-lengths, and certainly holds over a range which extends from X rays with a wave-length of 1 A.U. to hard gamma rays with a wave-length of 0·04 A.U. or less. In spite of an immense amount of research devoted to this particular point, it is still uncertain whether there is any specific difference between the longer and shorter waves in their effect upon the cells, although there is a general impression that radiation of short wave-lengths has a higher degree of selective action upon the cells of malignant tumours in virtue of their rapid growth.

Penetrating power of short waves.—What is, however, quite certain is the physical fact that radiation of short wave-length has a higher penetrating power, and is therefore capable of conveying energy into the deeper tissues, whilst radiation of longer wave-length is absorbed in the more superficial tissues and there expends a large part of its energy. It is for this reason that X ray apparatus is being made to generate X rays of shorter and shorter wave-length, but no apparatus has yet been devised to generate waves as short as the gamma rays of radium. These short wave generators are still on trial, and it is of importance that we should be able to compare the results obtained from them with those obtainable from mass radiation by radium.

PROBLEM OF THE UNIFORM FIELD

The margin between general destruction of the tissues and selective destruction of the malignant cells which are invading them is very small, and it is therefore an essential factor in treatment that every element of tissue throughout the region treated should receive exactly the same amount of radiation, for if at any point there is a defect some malignant cells will survive; whilst if at any point there is an excess the supporting tissues will be destroyed. In the treatment of malignant tumours by radiotherapy, whether by means of X rays or of radium, there is indeed a general agreement upon the importance of obtaining a uniform field of radiation throughout the region under treatment. Whatever method has been adopted its clinical success has always been proportional to the accuracy with which this physical problem has been solved, and there are strong grounds for believing that upon its more complete solution may depend the whole future of radium therapy in the treatment of cancer.

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[1] See THE LANCET, 1932, i., 1110.

So far therefore as our present knowledge is concerned, the solution of the exceedingly complicated clinical problem of the treatment of malignant tumours by radiation would appear to depend primarily upon the solution of the physical problem of obtaining a uniform field of radiation—that is to say, a field throughout which the scalar value of the energy absorbed is constant both in the cross section and in the depth of the field.

The advantage of gamma rays.—For this purpose gamma rays present a very definite advantage over X rays, since owing to their shorter wave-length they have a proportionately greater penetration. Although in both instances the intensity of the field diminishes with the distance from the source, it is far less affected in the case of gamma rays by the absorption of the tissues, and it is therefore easier to maintain a uniform field as the depth below the surface increases.

It is true that the great volume of power available in the modern X ray tube allows of a greater working distance, so that the proportion of energy delivered in the depth of the body by X rays may be equal to or even greater than that obtained from radium. But the use of such a volume of energy presents a disadvantage, since there is general agreement that X rays produce more constitutional disturbance than do gamma rays of equal adequacy, possibly owing to the more complete absorption which X rays undergo in the tissues.

The relative value of the two methods can only be discovered by further experience.

MODES OF APPLYING RADIUM

Massive radium units at a distance.—The use of massive units of radium outside the body furnishes a powerful means of subjecting a region of considerable volume to a uniform radiation by gamma rays, and if a sufficiently large quantity of radium were available this would prove the most perfect physical solution of the problem. It is not, of course, sufficient to use a single beam, since the unavoidable fall in intensity as the distance from the surface increases necessitates a dosage which exposes the proximal tissues, and especially the skin, to an excessive radiation. This, however, may be overcome by the use of multiple ports of entry, and by exact calculation an almost perfectly uniform field can be obtained throughout any volume of tissue where it is required.

Other methods.—The difficulty of obtaining sufficient radium for use by this direct method has compelled surgeons to devise other methods, by which radium, being brought into closer contact with the tissues, is used to greater economic advantage. The application of radium plaques, the insertion of needles, and the insertion of seeds all come under this heading, and there is no doubt at all that when properly applied in suitable regions they may combine economy with efficiency. They present a further advantage that, owing to the smaller amount of radium used, the effects are strictly localised, and neither the patient nor the attendants are exposed to the possible dangers associated with large quantities of radium.

Defects and limitations of interstitial methods.—Although these methods have in many instances given brilliant results, and are probably of permanent value, they present the disadvantage that they do not produce the ideal uniform field of radiation, and in spite of their success it is still an open question whether massive radiation may not produce even better results when applied to the same situations. This view is certainly supported by the work of Berven on cancer of the buccal cavity, where the results obtained are far superior to those which have hitherto been accomplished either by surface or interstitial methods. The question is one of the greatest importance, but it can only be settled by future work.

The use of needles and of seeds is further limited by the fact that it necessitates surgical access to the region of the tumour, and not merely to the tumour itself but to the whole of the neighbouring lymphatic area through which it may disseminate. This is often undesirable and frequently impossible, and indeed there is only a limited number of situations in which it is possible to treat effectively by these means the whole region under suspicion.

Regions still to be explored.—In spite of the variety of methods now available it is still only in special instances that radiotherapy has been applied to cancer with success, and there remain whole regions where this has not yet been achieved or even seriously attempted; as examples we may cite deep-seated tumours in the thorax and abdomen. It is here that massive radiation with its penetrating rays appears, at first sight, to offer the solution of the problem, but difficulties arise which are not merely physical but are inherent in the disease.

Such tumours are inaccessible to early diagnosis, and in the great majority of cases are far too advanced when diagnosed for treatment of any kind to be successful. They arise often in tissues which are themselves very radiosensitive such, for example, as the stomach, the intestine, and the rectum, and the annihilation of the tumour may involve the destruction of the organ from which it has sprung. Moreover, the exact extent of lymphatic involvement cannot be determined, so that it is difficult to ensure the complete irradiation of all malignant cells.

In spite of these difficulties there are definite grounds for hoping that by some combination of irradiation and surgery even cancer of the alimentary tract may ultimately be brought under control. In this achievement it is the definite opinion of such cautious observers as Forssell and Regaud that radiation from a distance, either by massive radium units or by X rays at a potential not yet obtained, will play an essential part.

THE DANGERS OF RADIUM

Although there is still very little known about the precise action of gamma rays upon the tissue cells, practical experience is so far advanced that any of the methods which we have mentioned may be employed by experts without danger either to the patients or to themselves. In the hands of the inexperienced the use of radium in any form is dangerous, and an attempt to assess the degree of danger would be more curious than useful.

The insertion of seeds or needles or the application of local plaques in expert hands leads to the disappearance of a tumour with only a moderate local reaction, and, except in the case of a large tumour, with very little constitutional disturbance. A faulty estimation of the dosage or an uneven distribution may lead to gross destruction of the tissues, extensive ulceration of a most painful and intractable type, and even to the death of the patient, whilst there can be no guarantee that the tumour itself has been destroyed. It is true that with a larger mass of radium destruction might be extended to an even wider sphere, but that is the only difference.

All the evidence before us goes to show that the use of massive units of even the largest dimensions can be so completely controlled that the safety of the patient is assured. The occurrence in some instances of severe constitutional disturbance has always been due to some error in technique, and has been avoided on further experience. We are satisfied that there is no foundation for the idea that the use of a massive unit is necessarily associated with any special danger to the patient.

CONCLUSION

The evidence has convinced us that the treatment of cancer by radiation from a massive radium unit (tele-radium) is a method the value of which has already been proved, although so far only in a limited field. How far these limits can be extended is a question which can be solved only by coördinated clinical, experimental, and physical research in which this country ought to take its share. The larger the unit available the more rapidly will its possibilities be discovered, and the wider will be the field which can be explored.

After a full consideration of all the evidence available we are convinced that a large radium unit should be erected in this country, under conditions where such coördinated effort is possible, containing not less than 5 grammes of radium element.

Material on which Report is Based

The technical committee held eight meetings, the first at the Royal College of Physicians on June 16th, 1932. Visits of inspection were made, including one to the Westminster Hospital annexe. The report is based upon personal experience in the various branches of radiotherapy to which members of the committee individually devoted special attention, and upon personal observations following visits to radium centres in London, Manchester, Birmingham, Paris, Brussels, Stockholm, and New York. The committee heard evidence from Prof. Sydney Russ, Mr. E. Rock Carling, and Mr. Stanford Cade, and saw a confidential report from Mr. Comyns Berkeley, who had visited most of the European radium centres on behalf of the League of Nations. To obtain the latest information about the progress of treatment by massive units, Prof. M'Lennan and Mr. Souttar paid visits to the radium institutes of Paris and Stockholm.

VISIT TO PARIS

In an interview with Prof. Regaud at the Institut Curie he stated that his experience of the use of 4 grammes of radium for distance therapy began in 1924, and had extended continuously over eight years, during which only minor alterations had been made in the construction and mounting of the apparatus.

The apparatus consists in a square lead box with walls 6 cm. in thickness, and with an internal area of 150 sq. cm. The radium is contained in 80 platinum tubes with walls 1 mm. in thickness, and is arranged in four groups of 20 tubes each on an internal frame, so that they are situated at the corners of the lead box. The opening of the box is closed up by a block of wax of such dimensions that the plane of the radium is at a distance of 10 cm. from the skin of the patient. As a general rule the treatment extends over 70 hours, and is divided into doses of from two to four hours according to the tolerance of the patient.

Prof. Regaud had never seen any injury to the patient, either local or general, nor any evidence that the treatment had been injurious. Sensitive patients often experienced sickness after the treatment, but this soon passed off and did not recur if a diminished dose was given on the next occasion.

Carcinoma of the stomach.—Twenty-five cases had been treated after surgical exploration, which had proved that the case was in fact carcinoma and inoperable. In the first group of cases the dose was inadequate (600–900 mc.d.), and no effect of any kind was observed. In later cases the dose was increased to as much as 1200 mc.d., and definite improvement was noted in several instances. Two cases of proved carcinoma are alive and free from symptoms after more than four years.

Carcinoma of the cervix.—One hundred cases were divided into two similar groups of 50 each. One group was treated by deep X rays working on a potential of about 200 kv., the other was treated by radium at a distance. The same local treatment was used in both cases. No difference whatever in the results was noted. Of Class I. (early cases) the percentage free from symptoms for five years was 83, whilst in Class III. (advanced cases) the percentage was 34.

Prof. Regaud regards deep X rays as the established method, and radium at a distance as an interesting and hopeful experiment. He considers it of great importance that far larger amounts of radium should be used. He has arranged for the 4-gramme unit at present in use to be increased almost immediately to 8 grammes, and in conjunction with Murdoch, Forssell, Holthusen, and Morison for the provision of a 15-gramme unit at Brussels. He is not, however, convinced that developments in X ray apparatus, and the raising of the potential to perhaps a million volts, may not again place X rays at an advantage as compared with radium.

Dr. Lacassagne, assistant director to the Institut, regarded as of extreme importance in treatment the accurate orientation of the unit, and the limitation of the period of treatment to the tolerance of the patient. It was impossible, he thought, to treat two patients at the same time satisfactorily. Neither Regaud nor Lacassagne regarded the very wide field exposed in their unit as in any way dangerous; it enabled them in fact to treat a larger volume of tissue. It did not involve any special danger to the liver, spleen, kidneys, or pancreas; a case of carcinoma of the liver had been treated with success, and without untoward result, the patient being alive four years later. They regarded the skin as one of the most sensitive structures in the body, and the arrangement of their treatment was largely directed to its protection.

At the Hospital, 33 rue Antoine Chantin, where the 4-gramme radium unit is situated, Dr. Monod explained the method of using it and of charting the treatment.

The unit is chiefly employed for the accessory treatment of carcinoma of the cervix, and in most cases the course of treatment extends over 21 days, during which the patient receives the radiation from 2100 mc.d. The aperture of the unit is 150 sq. cm., and in every case the treatment is given with the radium at a distance of 10 cm. from the skin. For the first two weeks the period of treatment is three hours on each day, but in the fourth week this is increased to four hours. The exposures are made through seven distinct portals in rotation, so that the same portal is not employed again until after the lapse of a week. The unit will shortly be increased to 8 grammes, without altering the mounting or screening.

A visit was also paid to the suburban Anti-Cancer Centre at Villejuif, 14 Avenue des Ecoles, where a 2-gramme is used as an accessory to local treatment, and chiefly in carcinoma of the cervix. Exposures varied with the tolerance of the patient; in most instances two exposures a day were given varying between two to four hours each. Dr. Wickham expressed himself as satisfied with the results.

VISIT TO STOCKHOLM

At Radiumhemmet, Dr. Ellis Berven, director of the Institute, demonstrated some twenty cases of carcinoma of the mouth and pharynx treated by the following technique: (1) primary treatment with the unit, (2) removal of any remaining growth by endothermy, and (3) final treatment by surface application of radium element. In the more recent cases the success of the treatment by the unit had been so considerable that no other procedure had been required. Among the cases were:—

A woman of 54, treated five years ago for sarcoma of the right tonsil. No recurrence, and the only trace of treatment slight scarring of the anterior pillar of the fauces.

A man of 62 with carcinoma of the right tonsil invading the back of the tongue, with large secondary masses in the neck. This man was treated three years ago by the unit only. No trace of any growth was discoverable, and beyond extensive scarring and telangiectasis in the neck, and some scarring of the tonsillar region, there was no evidence of previous disease.

A man of 52 with carcinoma in the left floor of the mouth extending far back towards root of the tongue, with a small secondary gland. There is now no trace whatever of disease.

A man of 65 with an extensive carcinoma actually infiltrating the greater portion of the left lower jaw. Six months ago this man was treated exclusively with the unit. The surface had healed entirely, excepting for a small area of necrosis where the dead bone had not yet separated.

The great bulk of the cases were inoperable when first seen, and most of them might have been regarded as surgically impossible, even from the point of view of alleviation. Dr. Berven admitted a certain percentage of failures. The unit was applied in general through an average of six ports of entry, arranged so as to provide full concentration on the tumour, but to avoid injury to the skin. With the exception of one or two cases where fixed glands had demanded an excessive local dose there was no trace of skin reaction.

Prof. Rolf Sievert, who designed the unit, demonstrated its construction.

It consists of a heavy mass of lead arranged in the form of the letter L, and pivoted about the middle of the longer limb. The radium itself is contained in a flat carrier, which can be inserted into either of two slots placed near the extremities of the two limbs of the L. The box contains 60 tubes of 50 mg. of radium element each, making 3 grammes in all, and it is so arranged that these tubes can be concentrated at the centre or brought out to the sides of the box by an external lever. When inserted in the short end of the unit the radium is brought into its central position. It is protected by the equivalent of 5 mm. of lead, and its distance is 6 cm. from the skin surface. The maximum aperture is a circle of 5 cm. in diameter. At the larger end the skin distance is again 6 cm., with a maximum aperture of 8 cm.

The unit is so mounted and placed as to move with the greatest facility into any position. The smaller end is used for situations where the introduction of the larger end would be anatomically impossible, such as the neck and the perineum. It has, however, a smaller lead protection, the thickness being here only 2·5 cm., as against 6 cm. at the heavy end.

Dr. Sievert also showed his new system of measuring ionisation and thereby determining the intensity of gamma rays with precision.

The essential part consists of two concentric spheres of metal insulated from one another by four points of amber. They can be of small size; in one the outer sphere was only 5 mm. in external diameter. The principle consists in charging the inner sphere to a high potential and then placing the instrument for a known time in a region to be investigated. The inner sphere is discharged by ionisation across the intervening air space at a rate proportional to the radiation, and a measurement of the charge remaining on the inner sphere enables the radiation to be determined with great exactness. These instruments have been charged in Stockholm, sent to America, there exposed to radiation, and returned to Stockholm, when it has been found possible to determine the value of the radiation to which it had been exposed within an error of 2 per cent.

In conversation Prof. Gösta Forssell expressed the opinion that with larger supplies of radium it ought to be possible to obtain even better results than those which had been shown. He saw no reason why, with sufficient quantities of radium and with sufficient experience in its application, it should not be possible to deal successfully with cancer in any region of the body. Although at present carcinoma of the intestinal tract was outside the possibility of direct treatment, he was convinced that by some combination of surgery and radium it could ultimately be brought under control. He attributed the success achieved in the Stockholm clinic to two chief factors: the combined team-work of a group of men, each expert in his own department, and the extreme precision with which the whole of their work was controlled.

THE FUTURE OF AMERICAN MEDICAL PRACTICE

(FROM AN OCCASIONAL CORRESPONDENT IN THE UNITED STATES)

AFTER five years' study the Committee on the Costs of Medical Care has published its final report. The committee is an unofficial body of doctors, public health officers, sociologists, and representatives of the general public. Its object, in the words of President Hoover, is to propose plans "for the delivery of adequate scientific, medical care to all of our people, rich and poor, at costs which can be reasonably met by them in their various stations of life."

In the authorised summary of its report the total cost of medical care for the nation in the year 1929 is *estimated* at $3,656,000,000. Attention is called to the uneven incomes of medical practitioners. The average net income of the general practitioner is found to be less than $4000, while that of the specialist is over $10,000. The expenditure of the medical dollar is made up as follows: physicians, 29·8 cents; hospitals, 23·4 cents; dentists, 12·2 cents; medicines, 18·2 cents; public health, 3·3 cents; nurses, 5·5 cents; "cultists," 3·4 cents; all others, 4·2 cents.

DEFECTS OF THE PRESENT SYSTEM

The present system of medical care is found to be deficient in nine respects:—

1. The people need a substantially larger volume of scientific medical service than they now utilise. This is particularly true of persons with small incomes. In spite of the large volume of free work done by hospitals, health departments, and individual practitioners, and in spite of the sliding scale of charges, it appears that each year nearly one-half of the individuals in the lowest income group receive no professional medical or dental attention of any kind, curative or preventive.

2. Modern public health services need to be extended to a far greater percentage of the people, particularly in rural areas, towns, and small cities.

3. There is need for a geographical distribution of practitioners and agencies which more closely approximates to the popular medical requirements.

4. Current expenditures for medical care, in rural and semi-rural areas, are insufficient to ensure even

approximately adequate service, to support necessary facilities, or to provide satisfactory remuneration to the practitioners.

5. Many practitioners, particularly well-trained recent graduates, should have opportunities to earn larger net incomes than they now receive. Incomes of general practitioners and of specialists should be more nearly equal than at present. The opportunity and incentive for "fee-splitting" should be removed.

6. Better control over the quality of medical service is needed, and opportunities should be provided for improving quality as rapidly in the future as it has been improved in the past. Improvement of the quality of service would include: Elimination of practice by unqualified "cult" practitioners; control over practice of secondary practitioners (like midwives, chiropodists, and optometrists); restriction of practice of specialties to those with special training and ability; more opportunity for post-graduate study for physicians, particularly rural practitioners; more opportunity for physicians to exchange experiences and to assist each other; better control, through supervision and further education, over the work of certain physicians and dentists who even though regularly licensed are not competent for many functions.

7. There should be more effective control over the number and type of practitioners trained, and their training should be adjusted to prepare them to serve the "true" needs of the people.

8. There is a need for reduction of waste in many directions, such as the money spent on unnecessary medication, on services of poorly qualified or utterly unqualified "cultists"; and in wastes due to idle time of practitioners, high "overhead" charges of private medical and dental practice, unused hospital accommodations, and the sending of patients from place to place for medical service.

9. There is need for some plan whereby the unequal and sometimes crushing burden of medical expenses can be distributed. The prevailing methods of purchasing medical care lead to unwise and undirected expenditures, to unequal and unpredictable financial burdens for the individual and the family, to neglect of health and of illness, to inadequate expenditures for medical care, and often to inequable remuneration of practitioners.

REMEDIES

The Committee's solution for the uneven burden of cost and the uneven rewards for service is that group service shall be rendered in return for group payment. The majority recommendations are as follows:—

1. Medical service, both preventive and therapeutic, should be furnished largely by organised groups of physicians, dentists, nurses, pharmacists, and other associated personnel. Such groups should be organised, preferably around a hospital, for rendering complete home, office, and hospital care. The form of organisation should encourage the maintenance of high standards and the development or preservation of a personal relation between patient and physician.

2. The committee recommends the extension of all basic public health services—whether provided by governmental or non-governmental agencies—so that they will be available to the entire population according to its needs. Primarily this extension requires increased financial support for official health departments and full-time trained health officers and members of their staffs whose tenure is dependent only upon professional and administrative competence.

3. The costs of medical care should be placed on a group payment basis, through the use of insurance, through the use of taxation, or through the use of both these methods. This is not meant to preclude the continuation of medical service provided on an individual fee basis for those who prefer the present method. Cash benefits—i.e., compensation for wage-loss due to illness—if and when provided, should be separate and distinct from medical services.

4. The study, evaluation, and coördination of medical service should be considered important functions for every State and local community; agencies should be formed to exercise these functions, and the coördination of rural with urban services should receive special attention.

5. The committee makes the following recommendations in the field of professional education:—

(*a*) That the training of physicians give increasing emphasis to the teaching of health and the prevention of disease; that more effective efforts be made to provide trained health officers; that the social aspects of medical practice be given greater attention; that specialties be restricted to those specially qualified; and that post-graduate educational opportunities be increased.

(*b*) That dental students be given a broader educational background.

(*c*) That pharmaceutical education place more stress on the pharmacist's responsibilities and opportunities for public service.

(*d*) That nursing education be thoroughly remoulded to provide well-educated and well-qualified registered nurses.

(*e*) That less thoroughly trained but competent nursing aides and attendants be provided.

(*f*) That adequate training for nurse-midwives be provided.

(*g*) That opportunities be offered for the systematic training of hospital and clinic administrators.

MINORITY RECOMMENDATIONS

The principal minority report is signed by nine members. Since it may be said to represent the official viewpoint of the American Medical Association it is also given here in full.

1. The minority recommends that government competition in the practice of medicine be discontinued and that its activities be restricted (*a*) to the care of the indigent and of those patients with diseases which can be cared for only in governmental institutions; (*b*) to the promotion of public health; (*c*) to the support of the medical departments of the Army and Navy, Coast and Geodetic Survey, and other government services which cannot because of their nature or location be served by the general medical profession; and (*d*) to the care of veterans suffering from bona-fide service-connected disabilities and diseases, except in the case of tuberculosis and nervous and mental diseases.

2. Government care of the indigent should be expanded with the ultimate object of relieving the medical profession of this burden.

3. The minority joins with the committee in recommending that the study, evaluation, and coördination of medical service be considered important functions for every State and local community, that agencies be formed to exercise these functions, and that the coördination of rural and urban services receive special attention.

4. United attempts should be made to restore the general practitioner to the central place in medical practice.

5. The corporate practice of medicine, financed through intermediary agencies, should be vigorously and persistently opposed as being economically wasteful, inimical to a continued and sustained high quality of medical care, or unfair exploitation of the medical profession. . . .

7. The minority recommends the development by State or county medical societies of plans for medical care.

Two dentists have signed a separate report agreeing in most respects with the majority, while Prof. W. H. Hamilton, of Yale University, presents a private solution of his own. The million dollars provided for this study has now been spent. No money was appropriated for promotion of the plans which the committee has evolved. Nevertheless the chairman of the committee, Dr. Ray Lyman Wilbur, Secretary the Interior, who will shortly return to his non-litical position as president of Stanford University. presses the hope that a continuing organisation ay immediately be formed to promote demonstraons in local communities.

MEDICINE AND THE LAW

Nuisance by a Mental Patient

LEGAL text-books say there is no recorded case of n action of tort being brought against a lunatic. f so. some proceedings in the Barton-on-Humber ounty court (recently reported by the *Law Journal*) re of exceptional interest. Tort. it is hardly necesary to explain. is the lawyer's label for a class of wrongs and breaches of duty which. when committed by one person. are legally harmful to another. Most of the actions in the law courts are framed ither in tort or in contract; sometimes the same action has elements of both.

The Barton-on-Humber proceedings concerned the occupiers of two adjoining houses divided by a party wall. The occupier of No. 12 complained that the wife of the occupier of No. 11 banged continually on he wall night and day and for long periods at a time, and that she also screamed and shouted filthy and disgusting language. The result on the occupier of No. 12 was insomnia and nervous debility necessitating medical attention. No. 12 asked the county court judge to grant an injunction and damages against No. 11. The offender in No. 11 had been a certified lunatic; she suffered from chronic delusional insanity; a year ago she was an inmate of a mental hospital whence she was released upon her husband undertaking to look after her. Her husband was joined with her as co-defendant in the county court action because, by a feminist streak in our law. a husband is responsible for his wife's torts. But the husband here was not liable qua husband unless his wife was liable: if the wife was insane. could she be liable for a tort? According to a dictum of Lord Esher in Hanbury v. Hanbury (1892). if A does an act which, if done by a person of sound mind. would make him civilly or criminally responsible to the law. then. if the disease in A's mind is not so great as to make him unable to understand the nature and consequence of the act, that is an act for which A will be civilly or criminally responsible. This implies that lunatics are not entirely above the law. The county court judge drew a distinction between voluntary and involuntary actions. He held that the noise of the banging and screaming amounted to a nuisance in law: it was in fact a tort, an actionable wrong. If the woman knew she was doing the acts complained of. she was liable in damages. The judge held that, although insane. the woman knew she was doing an act which annoyed her neighbours. She was in part amenable to reason. Her husband had said "She stops when I tell her." There was evidence that on one occasion. after a letter from the plaintiff's solicitor had been read to her. she was quiet for a fortnight. She bangs. said the judge. because she thinks she is provoked; therefore she does realise what she is doing. Consequently she was legally liable for the nuisance she committed. As the husband had offered to leave the house and take his wife away elsewhere. the judge might have been reluctant to grant the remedy of an injunction because that remedy is not deemed appropriate if there is no threat or prospect of future and continued infringement of rights. As. however. the nuisance had now been going on for years. an injunction was granted and. in addition. damages to the amount of £5 were awarded.

Noise as an Actionable Wrong

The foregoing case must not be taken as indicating that all noise from neighbours is a nuisance in law. Judges have made it clear that people who live in towns must expect the kind of noise which is inseparable from collective life. A convenient summary of the law is to be found in the judgment of Luxmoore, J., in Vanderpant v. Mayfair Hotel Co. (1930). a case where a resident in Curzon-street complained of the noise arising at the hotel from shouting, loud talking. or the handling of kitchen or domestic utensils. milk churns and other articles—noise which reached a climax when the preparation of meals was in full swing. The judge observed that. apart from any right which may have been acquired against them by contract. grant. or prescription. people are entitled as against their neighbours to the comfortable and healthy enjoyment of the premises they occupy. In deciding whether. in a particular case. this right has been interfered with and a nuisance thereby caused, it is necessary to determine whether the act complained of is an inconvenience materially interfering with the ordinary physical comfort of human existence. not merely according to elegant or dainty modes and habits of living but according to plain and sober notions obtaining among English folk. It is also necessary to take into account the circumstances and character of the locality. If the noise is an actionable nuisance according to this standard. it is no answer to say that the best known means have been taken to reduce or prevent it, or that the cause of the nuisance is the exercise of a business or trade in a reasonable and proper manner. The question of the existence of a nuisance is one of degree. and depends on the circumstances of the case.

It might be added that if the ordinary law could adequately restrain the noise nuisance. it would not be necessary for particular localities to obtain special powers by local Act for controlling that nuisance. There must be plenty of medical practitioners who are aware. either by their own experience or by that of their patients. of the annoyance and the menace to health which noise can constitute.

IRELAND

(FROM OUR OWN CORRESPONDENT)

THE IRISH HOSPITALS' SWEEPSTAKES

THE second report of the Committee of Reference of the Irish Hospitals' Sweepstakes—that dealing with the Grand National Steeplechase of last March—contains criticisms of the claims of the several participating institutions. the allotment of funds as approved by the Minister for Justice. and also some general observations on hospital policy. The allotment of funds is on the same principle as in the first report. and the flaws then observed became more obvious with each additional distribution. The method followed is to consider each claim as presented. prune it of extravagances and unnecessary expenditure. and declare an "award" such as would be proper to make if unlimited funds were available. This "award" is a purely imaginary figure. It is next reduced by the sum already received from previous sweepstakes by the institution concerned. The amount actually available is then distributed in proportion to the reduced "awards" so reached. This constitutes the real award. In the sweepstake under consideration the real award stands to the reduced imaginary award in the proportion of (in round figures) 1 to 14. Two flaws appear in this method. The deduction of the sum already received should be made from the real and not from the imaginary award. The principle adopted results in much larger sums proportionally being granted to the hospitals which have been participating for the longest periods. It neglects the actual present needs. In the second place, a percentage grant towards a scheme approved by the Committee may not in fact be of any help toward the carrying out of that scheme. For example, suppose that a building or development scheme to cost £100,000 be approved. But a grant of only £7000 is available. Clearly the full scheme cannot be undertaken on such a basis, and the grant may lie fallow or may have to be applied to some other purpose. These flaws would, of course, disappear if, during the lifetime of the sweepstakes, the total amount of the imaginary awards should become available, but only on this hypothesis. Moreover, neither the Committee of Reference nor the Minister has power to ensure that any particular grant should be used for the purpose for which it is given.

In its general observations the Committee of Reference pays special attention again to the lack of coördination between the several hospitals, and in particular in the case of children's hospitals. It is suggested that the several children's hospitals in Dublin should combine to form a joint central clinic. The Committee, while suggesting coördination and coöperation in both its reports, appears to be shy of discussing amalgamation; but the question cannot be avoided, and no doubt evidence on it will be put before the Hospitals Commission which is soon to be appointed to consider the whole question of hospitals in the Irish Free State.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

THE following half-yearly promotions have been made: Surg. Comdrs. to be Surg. Capts.: W. H. Edgar, A. G. V. French, and H. E. R. Stephens.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Comdr. T. Turner to be Surg. Capt.

Surg. Lt.-Comdrs. T. W. Drummond and W. F. W. Betenson to be Surg. Comdrs.

Surg. Sub-Lt. K. E. L. Yuill to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS

ARMY RESERVE OF OFFICERS

The undermentioned, having attained the age-limit of liability to recall, cease to belong to the Res. of Off.: Lt.-Cols. J. Fairbairn and R. R. Lewis.

TERRITORIAL ARMY

Lts. W. H. D. Patterson and B. Reid to be Capts.

INDIAN MEDICAL SERVICE

The prob. appt. of William Fleming as Lt. is confirmed. Capt. P. S. Varadarajan relinquishes his temp. commn.

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.—The 19th annual conference of this association will be held at Cardiff from July 13th to 15th. The address of the association is Tavistock House North, Tavistock-square, London, W.C.1.

NEW YEAR HONOURS

THE list of honours issued on Jan. 1st contains the names of the following members of the medical profession:—

Baron

Sir Thomas Jeeves Horder, Bt., K.C.V.O., F.R.C.P.
Senior physician to St. Bartholomew's Hospital; physician-in-ordinary to the Prince of Wales.

K.C.I.E.

Major-General John Wallace Dick Megaw, C.I.E., M.B., K.H.P.
Director-General of the Indian Medical Service.

K.C.V.O.

Frederic Jeune Willans, C.V.O., M.R.C.S.
Surgeon apothecary to H.M. Household at Sandringham.

Knights Bachelor

John Lawrance McKelvey, F.R.A.C.S.
Surgeon to the Royal Prince Alfred Hospital, Sydney.

San Crombie Po, C.B.E., M.D.
Medical practitioner and municipal commissioner, Bassein, Burma.

C.B.

Surgeon Rear-Admiral Herbert Reginald Harry Denny, M.R.C.S., R.N.

C.M.G.

Walter Burford Johnson, M.B., W.A.M.S.
Director of medical and sanitary service, Nigeria.

C.I.E.

Major-General William Charles Hughan Forster, M.B., V.H.S., I.M.S.
Surgeon-General with the Bombay Government.

Colonel John Norman Walker, M.R.C.P., I.M.S. retd.
Director of medical department, H.E.H. the Nizam's Government, Hyderabad, Deccan.

Lieut.-Colonel Robert Beresford Seymour Sewell, M.R.C.S., I.M.S.
Director of the Zoological Survey of India.

C.V.O.

William Hope Fowler, F.R.C.S. Edin.
Consulting radiologist to the Royal Infirmary, Edinburgh.

O.B.E. (Military)

Surgeon Commander William Harold Edgar, M.D. R.N.

O.B.E. (Civil)

John Thomas Bradley, M.D.
Chief medical officer, Seychelles.

Miss Charlotte Purnell, M.S.
Surgeon to the English Mission Hospital, Amman, Transjordania.

Eric Slack, M.B.
Medical officer, Leper Settlement, Botsabelo, Basutoland.

Robert Stanley Taylor, M.D.
Principal medical officer, Somaliland Protectorate.

Kaisar-i-Hind Medal

Miss Charlotte Rose Greenfield, M.B.
Medical officer in charge of St. Margaret's Hospital, Poona, Bombay.

Robert Harold Hull Goheen.
Medical missionary in charge of the American Presbyterian Mission Hospital, Vengurla, Bombay.

Rt. Rev. Kenneth William Stewart Kennedy, M.B.
Bishop of Chota Nagpur.

THE DOCTOR'S DAY

"Come, tell me how you live," I cried,
"And what it is you do!"

IX.—THE ANÆSTHETIST

COMPARED with other branches of practice the administration of anæsthetics has obvious advantages. One is that when the anæsthetist leaves after an operation his work is done as far as that patient is concerned; he has no worries about after-treatment or future welfare. It is true that some post-operative troubles are commonly attributed to the anæsthetic, but even so the anæsthetist's practical connexion with them is chiefly a matter of prevention. He is rarely called in to give help however much he may be made the scapegoat for its necessity. Again, the anæsthetist requires no consulting-room, so to say no shop-window. He is free to live where and as he pleases, so long as his home is not far from his base, and he can be reached at once on the telephone. Thus, provided he has someone to answer the telephone when he is out and capable of making appointments, a couple of rooms—even a good bed-sitting-room—suffice him. His expenses are far less than those of the general practitioner or of any other kind of specialist. His working-plant is no doubt a big item at the start, but to keep it in order and to supply the annual consumption of drugs, nitrous oxide, oxygen, ether, and the rest, is not a heavy burden. To practise in London he will not find a car essential; taxi-cabs are good enough. But it must be either London or some other large town; anyone who wants a country life must take up some other branch of medicine. He might perhaps live out of town if he decides to limit himself to dental anæsthetics which are required only in the day-time.

PROSPECT OF EARLY SUCCESS

An obvious advantage which the anæsthetist enjoys is that he begins to earn a fair income early in his career; he is not expected to look mature or even middle-aged. Many surgeons indeed prefer to work with an anæsthetist much younger than themselves so that they retain that sense of undisputed command and control of the entire proceedings which they think essential for the proper conduct of an operation. This advantage however of starting success early is counter-balanced by the disadvantage that an anæsthetist's work is likely to fall off comparatively early too. He is more apt to be displaced by the younger men than are workers in other branches. And this comes the harder on him as his emoluments are not high. With regard to this side of his work the anæsthetist's position is a little peculiar. Sometimes his fee is arranged by the surgeon, sometimes by the practitioner, and sometimes he is asked himself to name it. In the two former instances a common custom is for the anæsthetist's fee to be stated in terms of the surgeon's—10 per cent. as a rule. There is really no logical connexion between the two fees, and as time goes on and the true value of expert anæsthetists is more fully recognised he will more commonly be asked to state his own fee. It is obviously not easy for an anæsthetist in his active years, which are comparatively short, to save a sum sufficient to carry him on when his work is declining. It is partly no doubt for this reason that many men try to combine the career of an anæsthetist with that of a general practitioner. When their anæsthetic work falls off they have still the general practice on which to rely. Nevertheless this double life is not entirely satisfactory. The two kinds of duty often clash, and it is not easy to reach a good position in either career if both are attempted. Moreover, the tendency at the best hospitals now is to appoint as anæsthetists only those who are prepared to devote themselves entirely to this branch of work.

AN AVERAGE DAY

Let us glance at an average day in the life of a London anæsthetist attached to a teaching hospital and in the full bent of his career. At 9 A.M. he is at a nursing home to give an anæsthetic for a laparotomy performed by one of the surgeons with whom he is associated in hospital. At noon he gives gas-and-oxygen at a dentist's within a walk of his rooms, and at 12.45 P.M. another dental anæsthetic not far off. After a brief lunch he goes to hospital where he is giving anæsthetics and teaching students from 2–5 P.M. At 6 P.M. he gives an anæsthetic for an ear and throat surgeon. At 7 P.M. he pays a visit to a nursing home in order to examine a patient to whom he is to give an anæsthetic on the morrow and to decide about a preliminary injection. Some days he will have more to do than this, on others much less, and occasionally he will be wanted after dinner or at night for an emergency, an acute appendix or mastoid for example. Now and then his ordinary routine will be interrupted by a day with a maternity patient who desires to have no pain at all or has requested that an anæsthetist may be in attendance early during the confinement. Often it will happen that he receives invitations from two surgeons for the same hour, or so nearly the same that he is obliged to refuse one of them. And often it will happen that the case which he has been told will take "about half an hour" actually occupies from first to last an hour and a half. Those things make it difficult for a busy anæsthetist to arrange his work without ever being unpunctual.

HIS VARIED OUTFIT

The anæsthetist's job is nowadays not monotonous because there is such a variety of methods and drugs at his disposal. In the course of an afternoon he may be giving long gas-and-oxygen, open ether, endotracheal, gas-and-oxygen plus ether, and using spinal and regional methods. He cannot consider himself fully competent unless he can employ any one of these easily and successfully when a case demands it. Anæsthetics form no longer a narrow specialty; indeed the scope is so wide that already there are specialists within the specialty, one man for example making himself expert at endotracheal, another concentrating on spinal and regional injection. This wide choice has made more insistent the desirability of an interview between patient and anæsthetist before the operation, so that the anæsthetist can arrive at the correct decision. In hospital work this previous examination is rarely possible, and the anæsthetist must learn to make quick decisions just before operation. In private practice he is well-advised to see the patient the day or at least some hours before operation whenever this is possible, and it is remarkable how much this extra attention is appreciated. The sedative and encouraging effect of such a visit leaves the patient disposed towards a quiet entry into unconciousness.

An anæsthetist's position is peculiar in this that it is dual. He has relationship at the same time with his surgeon and with the patient and it may occur—although fortunately not often—that the line of action which he would choose in order best to please the one is not that which is for the greatest welfare of the other. What degree of anæsthesia is proper for a difficult abdominal operation? There are surgeons who insist on absolute relaxation, and there are patients in whom complete abolition of muscular tone involves grave risk. Here is a quandary to be solved only by the clear principle, to do what is believed to be in the best interests of the patient.

THE SAVOUR OF HIS CAREER

The anæsthetist's association with surgeons provides the savour of his career. Endowed with a modicum of tact and sense of humour he will derive a steady source of enlightenment and amusement from the different behaviour, professional and social, of those with whom he is privileged to work. One surgeon prefers complete silence during an operation, another talks all the time and expects audible appreciation. The anæsthetist may get salutary lessons in self-control both from the operator who occasionally loses his temper and reviles him and others, and from the surgeon who remains placid and efficient when everything appears to be going wrong. In private the anæsthetist learns diplomacy at interviews with patients' friends, and how to inspire confidence without forsaking veracity. He will not too rarely derive comfort from the surgeon's reference to the " excellent anæsthetic which Mr. A. administered." He will know how to work with those who follow every verbal appointment with a written confirmation and others who invite him to give an anæsthetic at a time and place to which a colleague has already been bidden.

It is open to any man of average attainment to become a first-rate anæsthetist if in addition to all else he is possessed of one additional quality—namely, nerve. The man who is easily perturbed and thrown off his balance can never succeed in this branch of work, for he will be confronted at times with a patient whose condition, suddenly and unexpectedly, becomes critical. His duty is then at once, without causing alarm or confusion, to see that all steps are taken to bring about recovery. There is nothing more harassing to the surgeon than an anæsthetist who is forever becoming needlessly alarmed, and nothing more dangerous than one who is not alive to the indications of approaching trouble. One other virtue is essential if he is to be acceptable to surgeons, and that is punctuality. He must never keep his surgeon waiting, and it is one of the chief difficulties with which he has to contend that surgeons are apt to prefer the same hour. It needs some strength of mind to refuse a case rather than run the risk of being late for it, but the anæsthetist who makes sacrifices in order to maintain punctuality will be repaid in the long run.

Outside his practical work he can find plenty of professional interest. There are problems of physiology and of psychology constantly arising in his daily work, and if he can make time and opportunity to seek the solution of these problems by experimental work he will add greatly to the attractions of his occupation. He will want to keep his knowledge abreast of the times by studying the periodic literature of his own and other countries. The man who is starting his career as an anæsthetist may, I think, face the future with a light heart for his work is young, as such things go, and there is plenty of development still ahead. Finality and perfection are far from having been reached in the practice of anæsthetics. He can have a full and interesting life, even if he is engaged on a career which has been well described as " honourable, but not fertile."

PUBLIC HEALTH SERVICES

Public Health in the Local Acts of 1931–32

The newly issued official Index to the Local and Private Acts [1] for the session 1931–32 has to deal with 97 Acts as against 112 in the previous session. The policy of economy must have reduced the activity of local authorities in seeking fresh powers from Parliament. Except for the Bury Corporation Act there is hardly an instance of any large-scale advance in a local code of public health. As usual, the recurrence of familiar provisions—for example, the power to close Sunday schools during epidemics—makes one wonder why Parliament is so slow to enact in a general Public Health Act many well-established common-form clauses which an individual local authority has now to pay to obtain in an Act of its own. Some Local Acts are due to a desire to alter existing rights as when St. Andrews wants power to charge a fee for admission to the golf links during championships. In the main the Local Acts represent progressive stages in eluding the restrictive influence of the district auditor and the doctrine of *ultra vires*. Though it may be a legal person, a local authority has no powers which it has not been expressly given. Does a town like Bury want to spend money on an aerodrome or on educational lectures or on pictures for its art gallery? These activities, deemed by some desirable, by others extravagant, are outside its scope until Parliament gives permission. Some local bodies set the pace for others; gradually the new powers are tested by experience and are adopted elsewhere if found successful. The following summary, as in previous years, endeavours to specify novel clauses likely to serve as precedents.

To begin with the subject of food, the London County Council breaks fresh ground. An existing provision for inspection and destruction of unsound meat, &c., is extended to animals or articles of food and drink offered as prizes at entertainments or given away under advertisement schemes or otherwise. London, Bury, and Rochdale have fresh requirements for compulsory notification of food poisoning. There are various familiar clauses for restricting the handling of food by infected persons, for registering makers and premises in respect of ice-cream or potted meat, and for the general regulation of food preparation, storage, and transport. Dundee has power to restrict the conveyance of meat in open vehicles; this power seems new in Scotland. The Bury clauses as to street vendors of food, inspection of vehicles, and precautions against contamination where food is prepared in yards follow previous precedents, but there seems to be a new safety provision requiring fire-extinguishing apparatus to be available where heated or boiling fat or oil is extensively used in cooking fish or potatoes. Again, as regards infectious disease, the Bury Act (Part VIII.) includes several well-tried provisions as to the supply of antidotes, the removal of dead bodies and the disinfection of conveyances used for carrying them, tuberculosis disinfection, powers of keeping children away from Sunday schools and entertainments, entry into premises where there is dangerous infectious disease, obtaining laundrymen's names, compulsory information "for the purpose of enabling means to be taken to prevent the spread of the disease," notification of pulmonary tuberculosis, and power to demolish stables or cowsheds when the medical officer certifies the presence of infectious or parasitic disease. A few of these clauses also appear in the Welwyn Garden City Act.

In respect of housing and building law the Bury corporation seems to have struck out a new line by prohibiting the construction of cellars or rooms belonging to dwelling-houses where the floor level will be below the highest known level of subsoil water. It also restricts the erection of dwelling-houses on land which is either liable to flooding or unsuitable by reason of the nature of the subsoil. With an unhappy experience of the danger of floods to houses and their occupants, the London County

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[1] H.M. Stationery Office. 1s. 6d.

Council has taken new powers to maintain automatic tide gauges and to give warnings of high tides in the Thames. Rochdale, Blackpool, and Wolverhampton have elaborated their powers of regulating buildings, though not all have so large a scope for by-laws as at Bury, where the corporation may regulate the number of houses in one block or row, the intervening spaces, height of walls or fences, testing of drains, adequate flushing of closets and protection of their pipes from frost, fixed baths, ventilation of geysers. Bury has also the usual provision as to food storage accommodation in existing and future dwelling-houses (ventilated pantry and other facilities). Provisions which perhaps affect amenities more than health include the Edinburgh restriction on "ribbon" building development along roads (Surrey furnished a precedent for this last year) and the Bury clause for removing dilapidated and neglected buildings which are "in a structural condition prejudicial to property in, or the inhabitants of, the neighbourhood." There is a novel clause in the Edinburgh Act for requiring repainting or redecoration of exteriors. Cities like Bath, which have panoramic assets to be destroyed, will doubtless note this attention to colour-schemes. A wide range of clauses controlling the lay-out of land and the erection of temporary structures occurs in the Lindsey County Council (Sandhills) Act, where doubts about the ownership of the Sandhills and the power to enclose or build have been solved in special circumstances. The Act recites that many buildings "are unsightly or otherwise of an undesirable character . . . and are not provided with a proper water-supply or sanitary conveniences." Fresh provision for regulating life in tents, vans, and shacks is made at Rochdale, Welwyn, Bury, Cambridge, and Clydebank. Dundee has provided for an equalisation fund for slum clearance. At Birkenhead abandoned drains must be filled in, and persons constructing new streets may be required to provide separate sewers for sewage and for surface water.

There is less than usual of interest to the medical profession in the miscellaneous contents of the Local Acts of 1931–32. Three clauses in the Bury Act deal with nuisances encountered in town life. The nuisance of noise is added to the nuisances in the Public Health Act and is dealt with as in precedents in which Edinburgh led the way in 1930. The ejection of steam or waste gas to the annoyance of the public is prohibited. Silencers must be fitted to stationary internal combustion engines. In all three cases there is a saving for railway companies. The nuisance of dogs fouling pavements is dealt with at Edinburgh; experience elsewhere shows that this statutory provision has more value as a warning notice than in actual enforcement by penalty. An illustration of the local variety of criminal offences is the regulation at Dundee of writing or chalking on carriage-ways. Rochdale follows former precedents in restricting the sorting of the contents of ashbins. Welwyn and Bury can now require owners or occupiers of houses or shops to provide portable dust-bins. Bury has gained the power, novel until a few years ago, to remove to an infirmary any person who is aged or infirm or physically incapacitated and who lives in insanitary premises or anyone who is suffering from grave chronic disease and is not properly looked after The not uncommon precautions against plumbism appear in the Chesterfield and Bolsover Water Act. Birkenhead is now authorised to construct, equip, and manage "medicated and other baths, including baths the efficient properties of which are due to agencies other than water." To conclude this list of miscellaneous items, mention may be made of the special superannuation clause for the medical officer in charge of mental services in Edinburgh and the variation of the charitable trust of Epsom College, once known as the Royal Medical Benevolent College. The R.S.P.C.A. is incorporated by a special Act; one of the functions of its council is "to arrange for the proper conduct of punitive, persuasive, educational. Parliamentary. and all other operations."

As regards the form and draftsmanship of the Local Acts, there are two instances of successful consolidation —the Edinburgh Act and the Thames Conservancy Act. The latter contains wide powers for controlling the passing of sewage, refuse, oil. and tar into the river, and for regulating the sanitary arrangements of vessels and the general navigation of the upper Thames with special care for its bird life, its fish, and its amenities. Most of these clauses are an improved restatement of the effect of former statutes. The London County Council, which is credited with most laudable ambitions in the direction of rewriting the various laws by which its administration is carried on, has no fresh instalment in the past session. It has already consolidated the London Building Acts and is understood to be applying the same admirable effort to the various Public Health (London) Acts. The result may appear next session. It would be an object-lesson to Parliament to rewrite in orderly form the Public Health Acts applicable to the country as a whole.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 24TH, 1932

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox. 16 (last week 28); scarlet fever, 2005: diphtheria, 882; enteric fever, 36; acute pneumonia (primary or influenzal). 1721; puerperal fever. 38; puerperal pyrexia, 94; cerebro-spinal fever. 26; acute poliomyelitis, 8: acute polio-encephalitis. 1; encephalitis lethargica. 6; dysentery. 4; ophthalmia neonatorum. 61. No case of cholera, plague. or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Dec. 27th–28th was as follows:—Small-pox, 63 under treatment, 0 under observation (last week 67 and 1 respectively); scarlet fever, 1852; diphtheria, 1696; enteric fever, 12; measles, 251; whooping-cough. 440; puerperal fever, 21 (plus 8 babies); encephalitis lethargica. 228; poliomyelitis, 5: "other diseases," 183. At St. Margaret's Hospital there were 11 babies (plus 5 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London. there was no death from small-pox. 2 (0) from enteric fever, 24 (0) from measles. 11 (1) from scarlet fever, 20 (8) from whooping-cough. 25 (4) from diphtheria. 50 (11) from diarrhœa and enteritis under two years. and 120 (8) from influenza. The figures in parentheses are those for London itself.

Bristol and Poole each reported 1 death from enteric fever. Measles caused 5 deaths at Liverpool. and 4 at Birmingham. Four fatal cases of diphtheria occurred at Hull. Fatal cases of influenza were reported from 40 great towns, the largest number of deaths being 30 at Birmingham, 9 at Sunderland. 8 at Liverpool, 5 each at Newcastle-on-Tyne and South Shields. In the same week Glasgow reported 86 deaths from influenza and 15 from whooping-cough.

The number of stillbirths notified during the week was 277 (corresponding to a rate of 47 per 1000 total births), including 42 in London.

PANEL AND CONTRACT PRACTICE

The Out-patient Inquiry

A FIRST impression on the report of the committee appointed to inquire into out-patient methods is that most of the conclusions and recommendations are sound enough from a general practitioner's point of view, though it is regrettable that no practitioner joined in their deliberations. The committee state that it is highly desirable that in any plans for the organisation of the medical service of the community the sympathy of practitioners as well as of the hospital staff should be secured. With regard to panel practitioners, some evidence was given—we are not told by whom—that conditions of insurance practice do not make for efficiency, and that panel doctors do not give adequate time and attention to their patients, having too many of them. On the other hand, some hospital consultants, giving evidence on behalf of the B.M.A., said that all their experience showed that the great bulk of panel practice was carried out honestly and with very great skill, and they did not think that hospitals need do the work of the panel doctors for them. The committee say that the representatives of the London public medical service made out a strong prima facie case for the proposal that hospitals should refer patients to the public medical service for the treatment of minor ailments. It is suggested that, as a check on practitioners referring unsuitable cases to hospitals, each hospital should keep a record of patients referred by each panel doctor; if any doctor is found to be sending up a disproportionately large number of cases—especially if his forms were badly filled in—he should be reported to the panel committee to be dealt with.

Much evidence has been taken, some of it being mutually contradictory. The committee appear to have sought a middle way in their suggestions for solving the more important issues, such as whether a hospital should throw its doors open to everyone or offer a purely consultative service. They consider that the movement towards more consultative use of facilities is in the right direction, but that it should be possible for patients who desire a second opinion to have access to hospitals without having first to obtain sanction from a practitioner. It would indeed be difficult to refuse to see anyone who comes to hospital complaining of being ill and goes to the casualty department. One examination and one treatment is often all that is required by such a patient, but this hardly applies to out-patient attendance. The condition laid down for such attendance is inability to pay consultant fees. Nothing is said about practitioners' fees, and this is perhaps a weak spot in the report, for it implies that consultants are to be protected from loss of fees by the use of the out-patient department, but not general practitioners. The committee may be criticised for a ruling which will bolster up the whim of a patient who imagines that his own doctor cannot look after him properly, while failing to protect that doctor from loss of fees. But all will welcome the encouragement of coöperation with other agencies in the disposal of patients not suitable for enrolment as out-patients, the hospital almoner providing a valuable part of the machinery for such coöperation. Standard hospital letters are advocated.

On the question of the time spent by patients in waiting, it is pointed out that a few minutes saved by up-to-date methods for dealing with each patient in a queue makes a great difference to those at the end of the queue. For example, registration by a modern system of filing and indexing saves much time. A certain amount of waiting is inevitable, but alteration of times of attendance for old patients or groups of patients, and sometimes structural alteration can materially lessen the waiting period. Some striking instances are given in the report of minor alterations in procedure or structure which have greatly diminished waiting periods. An interesting piece of evidence was that those hospitals which by adopting new methods had reduced the waiting period, in this way attracted more patients, and overcrowding soon became re-established. In this matter of waiting the committee say "it is the consultant the patient wants to see and for whom he is willing to put up with long waiting without complaining."

The investigation of complaints elicited a statement from one witness that it is not to the advantage of a patient to become known to the hospitals as a complainer. It is agreed that complaints are not numerous.

The figures of 12 teaching hospitals show that in 1931 there were 125,000 less out-patients than in 1911, but 1,160,000 more attendances, indicating that more serious cases were being dealt with. The Hospital Saving Committee say in their evidence "one thing is common to all the hospitals—they have the confidence of the working-class population."

Psychotherapy under the Act

The position of psychotherapy under the National Health Insurance Act was carried one stage further at the last meeting of the London insurance committee when there took place a full dress debate on the question as to whether this was a treatment for which it would be legitimate for an insurance practitioner to charge fees to an insured person. It will be remembered that the Local Medical Committee for London held the view that this was a specialty which should be regarded as outside the Act; the medical benefit subcommittee of the London insurance committee thought otherwise, and on Dec. 22nd the full insurance committee for London confirmed the medical benefit subcommittee's view. Dr. Gregg led the attack against this opinion that psychotherapy should be included among the ordinary services of a practitioner to his panel patients. He asserted that the real reason underlying the unwillingness to acknowledge claims for special fees for psychotherapy was that members of the medical benefit subcommittee viewed psychotherapy with suspicion. It was, however, a definite specialty, the doctor claiming fees in the four cases on which the matter had arisen had satisfied the regulation as to his qualifications, and therefore whether the committee liked it or not they ought to pass these claims. Dr. Chase agreed that psychotherapy was a specialty and that the panel practitioner in question had the necessary qualifications, but considered that skill in psychotherapy corresponded to a high degree of specialism on the medical side of practice, such as the special treatment of diabetes, or pneumonia, or some nervous diseases. The treatment of such medical cases would not, he thought, for one moment be considered outside the scope of the Act, and yet they often involved specialist work. Whilst the treatment of diabetes would not be considered outside the Act, the moment manual dexterity was involved, such as the estimation of the blood-sugar of such a patient, both committees would agree that a charge could be made. No manual dexterity was involved in the treatment of a patient by psychotherapy, and he thought the specialty was not one for which it would be proper to charge an insured person. He held that it was obviously better to let the Ministry of Health decide the point. Miss Samuel held that nothing should be done to prevent the poor from obtaining benefits available to the rich and that the committee should do nothing to discourage the psychotherapist. Dr. Cardale spoke strongly in favour of psychotherapy being placed outside the Act, since it was now recognised everywhere as a definite specialty. Mr. T. B. Layton pointed out that the tendency of modern medical education was to give students some knowledge of every branch of medicine. Psychotherapy was not a new subject and all practitioners employed it either knowingly or unknowingly in the treatment of their patients.

The debate was continued by other speakers, till finally Mr. Spearing, the chairman of the medical benefit subcommittee, pointed out that automatically the decision to refuse payment for fees claimed for this "specialty work" made it obligatory on the Ministry to appoint a court of referees to decide the question. He did not think that it should be left to patients, needing any form of treatment, to decide whether they should go to some hospital where they would not be charged for it or whether they should pay a doctor, who hoped to cure them by this treatment, but required a fee for it. It was the duty of the committee to protect the insured person against the unscrupulous doctor. After all, the fact that he could not charge his insured person for this treatment need not prevent the doctor from giving the treatment if he was so certain that it would do good.

CORRESPONDENCE

GASTROSTOMY VERSUS INTUBATION

To the Editor of THE LANCET

SIR,—In your issue of Dec. 31st (p. 1434) Mr. Hugh Donovan makes a very moderate plea in favour of gastrostomy in cases of carcinoma of the œsophagus. The condition, practically always fatal, is regrettably frequent; many of us have at one time or another to advise a patient as to the best prospects of relief. I am prompted to offer in tabular form the pros and cons of gastrostomy and intubation.

GASTROSTOMY: *Advantages.*—(1) The operation requires no special preparation, equipment, or technical experience, but can be performed by anyone accustomed to abdominal surgery; and, if necessary, under local anæsthesia.

(2) Once a gastrostomy has been performed nutrition is assured; further surgical treatment is seldom needed. But a gastrostomy is not necessarily permanent, and can be closed if the need has passed.

(3) It is applicable to all types of stricture, and is the *only* method available where a bougie cannot be passed through the stricture.

(4) The growth is relieved from irritation, and some improvement in swallowing occasionally follows.

Disadvantages.—(1) Food is not taken by the natural channel, and is not tasted. The psychic effect, when the patient realises that he will never taste or swallow anything again, is often very bad.

(2) Swallowing even of saliva may be impossible, with resultant distress and choking from overflow into the trachea; it is not easy to nurse a gastrostomy patient in the prone or semi-prone position. (Salivation is often a prominent symptom.)

(3) With rare exceptions, only sedentary work is possible.

(4) The majority of hospital-class patients are unable to make their own arrangements for feeding, care of the fistula, &c., and so the few remaining months of life must be passed in an institution.

(5) The immediate mortality is considerable.

INTUBATION (e.g., with Souttar's tube): *Advantages.*—(1) The patient is hardly conscious of disability; he can carry out even hard manual labour, as long as his strength allows; he takes his food and drink by the natural channels, and is not bothered by saliva; the necessary modifications of diet are within the capacity of any working-class home.

(2) Intubation is readily combined with radium or radon treatment.

(3) The immediate mortality is low (? 2–3 per cent.).

Disadvantages.—(1) Special equipment and training are necessary; the greatest care and gentleness are required in dealing with the diseased gullet; a general anæsthetic or basal narcosis is usually required.

(2) Occasionally an indiscretion in diet may lead to the tube being blocked. The tube may become displaced; in experienced hands this is rare, except with a soft growth through which the tube gradually passes. Further endoscopic treatment becomes necessary.

(3) The position of the growth (e.g., at the cardia) may render it unfavourable for intubation; it may be impossible to pass a bougie through the stricture or to dilate it sufficiently to admit a tube.

Either method may be combined with deep X ray or with chemotherapeutic treatment. Whichever is adopted, one class of patient presents a very bad risk—namely, those suffering from actual water-starvation; before anything is done, measures must be taken to remedy this, and when that has been achieved, I believe intubation to be much less risky than gastrostomy. Every case must be considered on its own merits; but in general the advantages of intubation are so great, and its disadvantages so much less serious than those of gastrostomy, that this method will be preferred.

I am, Sir, yours faithfully,

E. WATSON-WILLIAMS.

Clifton, Bristol, Dec. 31st, 1932.

To the Editor of THE LANCET

SIR,—Mr. Donovan gives the records of an important research into the operative mortality-rate, average length of stay in hospital, and the duration of life after operation in a series of 47 cases of carcinoma of the œsophagus which were subjected to gastrostomy. He states that "a consideration of these results does not encourage one to advise this operation strongly"; he is impressed by the observation "that a patient has a more comfortable end when he has a gastrostomy," and that "repeated intra-œsophageal instrumentation is very distressing to some old patients." Without wishing to detract in any way from the value of the facts set forth in

MEDICAL NEWS

University of Oxford

On Dec. 17th the following degrees were conferred:—

D.M.—A. J. Gibbs.

B.M.—J. R. Robertson, R. F. Woolmer, W. H. Owles, H. B. Morris, R. C. MacKeith, R. A. Beaver, J. E. Jenkins, A. J. Grace, and N. P. Bruce.

University of Cambridge

At recent examinations the following were successful:—

THIRD EXAMINATION FOR M.B. AND B.CHIR.

Part I., Surgery, Midwifery, and Gynæcology.—J. C. G. Anderton, E. F. Baines, H. Barcroft, G. F. Barran, C. G. Batty-Smith, W. T. C. Berry, C. E. Bevan, E. V. Bevan, R. W. Billington, G. O. Brooks, R. H. Brown, J. R. Chambers, A. H. Charles, F. H. Coleman, J. Collinson, P. T. Cooper, A. G. Cross, H. S. Davis, L. W. B. Dobbin, J. R. Duffield, D. K. Emery, W. G. Evans, A. A. G. Flemming, P. H. R. Ghey, P. R. Goodfellow, R. W. Graham-Campbell, S. J. Hadfield, B. P. Harris, F. G. Hinks, M. I. A. Hunter, T. B. Jones, A. H. Knowles, D. Kyle, R. C. Langford, C. A. Lewis, W. Lewis, T. E. S. Lloyd, M. W. Lloyd Owen, K. Lumsden, F. D. MacCarthy, A. B. MacGregor, W. S. McKenzie, F. G. Maitland, T. C. Maling, G. J. H. Maud, J. W. Maycock, M. P. Morel, C. W. Morley, H. J. V. Morton, T. P. Mulcahy, J. P. S. Peck, K. M. A. Perry, F. W. J. Platts, J. S. M. Pringle, S. A. Propert, P. J. Richards, W. F. Richards, F. Ridehalgh, I. G. Robin, K. Robson, G. Scott, E. P. Sharpey-Schafer, D. W. Smithers, J. G. C. Spencer, T. V. Tattersall, A. C. Taylor, E. W. Taylor, H. B. Tipler, G. E. H. Tisdall, G. I. Watson, W. E. Wells, C. J. G. White, A. Willcox, J. Wilson, and R. M. Yeo.

Part II., Physic, Pathology, and Pharmacology.—S. E. Birdsall, C. P. F. Boulden, A. Bowen-Davies, E. Bradbury, W. D. Brown, J. W. Campbell, C. A. Clarke, F. J. Curtis, S. F. L. Dahne, W. D. Dick, L. W. B. Dobbin, P. M. Dobbs, R. H. Dobbs, J. C. Drury, G. A. Emmerson, R. H. Foster, D. W. C. Gawne, W. G. Gill, C. A. Grove, G. W. Hall-Smith, E. R. Hargreaves, B. P. Harris, J. Howell, N. M. James, H. V. Knight, A. R. R. Le Fleming, R. S. Lewis, G. A. Mandow, A. R. R. Mears, D. A. Metcalf, G. A. Miller, F. H. Morrell, J. Parkes, E. B. Pawson, R. V. Payne, K. M. A. Perry, R. G. Pulvertaft, C. G. Roberts, R. D. Roper, F. W. Shepherd, S. K. K. Sze, C. W. Thomas, C. B. M. Warren, J. G. Warren, G. D. Wedd, H. D. White, G. A. W. Whitfield, and W. Wilson.

University of London

At a recent examination the following were successful:—

M.S.

Branch I. (Surgery).—O. V. Lloyd-Davies and E. G. Muir (University Medal), Middlesex Hosp.

Forthcoming Lectures.—Six lectures on Factors in Nutrition will be given in the physiological department of Bedford College, Regent's Park, N.W., by Prof. S. J. Cowell, at 5 P.M. on Wednesdays from Jan. 11th to Feb. 15th inclusive. At the same time on Thursdays from Jan. 12th to Feb. 2nd Prof. R. J. S. McDowall will deliver a course of lectures on the Integration of the Circulation. These lectures will take place at King's College, Strand, W.C. The Respiratory Functions of the Blood will be the subject of four lectures which Dr. L. E. Bayliss will give at University College, Gower-street, W.C., at 5 P.M., on Mondays and Fridays from Jan. 16th to 27th. Prof. John Mellanby will take the chair at the first of the two lectures which Sir Charles Sherrington will give at University College on Jan. 30th and Feb. 6th at 5.30 P.M. On Jan. 30th Sir Charles will speak on the Flexibility of Reflex Action, and on Feb. 6th on the Spinal State. There will be cinematographic illustrations of the second lecture. Prof. Max Bergmann, of Dresden, will give three lectures on the Chemistry of Proteins at University College Hospital medical school at 5.15 P.M. on Jan. 20th, 23rd, and 24th. No ticket is required for these lectures.

Society of Apothecaries of London

At recent examinations the following were successful:—

Surgery.—J. L. Bates, Guy's Hosp.; A. E. Glanvill, Univ. of Birmingham; J. Harris, Univ. of Witwatersrand and Middlesex Hosp.; C. A. Saggoo, King's Coll. Hosp.; and L. Wailer, Guy's Hosp.

Medicine.—W. E. P. Corbett and F. M. F. Forrest, St. Mary's Hosp.; M. F. Levick, Univ. of Sheffield; E. M. F. O'Donovan, Royal Free Hosp.; and J. C. Selnes, Univ. of Oslo and Charing Cross Hosp.

Forensic Medicine.—M. F. Levick, Univ. of Sheffield; C. W. O'Donoghue, London Hosp.; J. C. Selnes, Univ. of Oslo and Charing Cross Hosp.; M. Sourasky, Charing Cross Hosp.; and E. Teplitzky, Univ. of Berne and St. Mary's Hosp.

Midwifery.—L. Bhanot, Royal Free Hosp.; P. D. Bhatt, London Hosp.; E. L. Burgess, King's Coll. Hosp.; W. H. Ekin, Univ. of Cambridge and Westminster Hosp.; A. J. McGuire, Univ. of Manchester and Charing Cross Hosp.; J. C. Selnes, Univ. of Oslo and Charing Cross Hosp.; and T. B. Smith, St. Mary's Hosp.

The following candidates, having completed the final examination, are granted the diploma of the Society entitling them to practise [illegible] d midwifery: J. L. Bates, P. D. Bhatt, F [illegible] arris, M. F. Levick, C. A. Saggoo, J. C. Sel [illegible]

Lectures on Primitive Man

The Swiney lectures on geology will this year be devoted to Primitive Man, and are being given in the lecture theatre of the Imperial College of Science, Exhibition-road, South Kensington, London, S.W., at 5.30 P.M., on Mondays, Wednesdays, and Fridays, by Mr. T. M. Finlay, D.Sc. The series of 12 lectures began last Wednesday; admission is free; and the programme may be had from the director of the British Museum (Natural History), Cromwell-road, S.W.7.

Royal Sanitary Institute

A joint meeting of this institute with the food group of the Society of Chemical Industry will be held at the institute (90, Buckingham Palace-road, London, S.W.), at 5.30 P.M., on Friday, Jan. 20th, when Mr. E. B. Hughes, F.I.C., of Messrs. J. Lyons and Co., will open a discussion on Factory Cleanliness in the Food Industry. The speakers will include Dr. Thomas Carnwath, Lieut.-Colonel Gerald Leighton, M.D., Dr. Charles Porter, Sir Weldon Dalrymple-Champneys, M.D., and Dr. T. W. Naylor Barlow.

Congress on the Care of Children

A Congrès International pour la Protection de l'Enfance will be held in Paris from July 4th to 9th, 1933. The main subject of discussion will be the relation between Charity and the State. The eight sections of the congress will be devoted to maternity, early childhood, late childhood, adolescence, abnormal childhood, social service, legal rights of the child, and lastly to questions of maternal and child welfare not included under any of these headings. Particulars may be had from the secretariat at 26, Boulevard de Vaugirard, Paris, XV.

German Society for the Study of the Circulation

The sixth annual meeting of the Deutsche Gesellschaft für Kreislaufforschung is to be held at Würzburg from Sunday, March 5th, to Tuesday, the 7th, when Prof. E. Magnus-Alsleben will preside. The subject chosen for discussion is the relation of the circulation to the nervous system, the first day being given up to the theoretical side, chairman Prof. H. E. Hering (Cologne), the second to clinical observations, chairman Prof. F. Kauffmann (Berlin). Anyone wishing to give papers or demonstrations should give notice before Jan. 15th to Prof. Magnus-Alsleben, Medizinische Poliklinik, Würzburg. The meetings will be held in the University Ophthalmic Clinic, Röntgenring 12.

Post-graduate Courses in Berlin

International medical post-graduate courses are to be held in Berlin on the following subjects: internal medicine (Feb. 27th to March 4th); practical hæmatology (March 6th to 11th); diseases of the skin and venereal diseases (March 20th to April 1st); practical improvements in radiotherapy (April 2nd to 9th); and surgery (April 24th to 29th). Monthly courses on all special fields of medical science, including practical work, will also be held. Arrangements are being made to hold a further series in the autumn of 1933, dealing with the following subjects: endocrinology, thoracic surgery, malignant disease, narcosis, the theory of colloids, diseases of children, ophthalmology, heredity, and orthopædics. Particulars of all these courses may be had from the information bureau of the Kaiserin Friedrich-Haus, Robert Koch-Platz 7, Berlin, N.W.7.

Fellowship of Medicine and Post-Graduate Medical Association

A demonstration of selected cases of general medical and surgical interest will be given at the Lambeth Hospital on Friday, Jan. 13th, at 2 P.M. A series of lectures on Practical Problems in Medicine and Surgery will be given on Tuesdays at 4 P.M. at the Medical Society of London, 11, Chandos-street, Cavendish-square, W., beginning on Jan. 17th. A demonstration of X ray films will also be given there by Dr. Peter Kerley on Friday, Jan. 20th, from 4.30 to 6 P.M. Three-quarters of the time will be devoted to chest and heart, and one-quarter to the intestinal tract. A course in cardiology, occupying the whole of each day with demonstrations and lectures, will be given at the National Heart Hospital from Jan. 16th to 27th. It is hoped to arrange a demonstration of cases dealing with Diseases of Children on Thursday, Jan. 26th, at 8 P.M., at the National Temperance Hospital, Hampstead-road. The demonstration will be of a practical nature, and two physicians and one surgeon will be in attendance with suitable cases which the post-graduates will be enabled to examine. Other forthcoming courses include dermatology, gynæcology, diseases of chest, antenatal treatment, &c. Application for further particulars should be made to the Secretary of the Fellowship at 1, Wimpole-street, W.1. The above courses and demonstrations are open only to members and associates.

Hunterian Society

The Hunterian lecture of this society will be delivered at the Cutlers Hall, Warwick Lane, London, E.C., at 9 P.M. on Monday, Jan. 16th, by Dr. Einar Thomsen, of Copenhagen. His subject will be Experimental and Clinical Studies of Gastric Juice.

The annual dinner will be held at the May Fair Hotel, Berkeley-street, W., on Thursday, Feb. 9th.

Royal Institution

The programme of lectures to be delivered between now and Easter include Friday evening discourses on the Crystals of the Living Body, by Sir William Bragg (Jan. 20th), on the Physical Nature of the Nerve Impulse, by Prof. A. V. Hill (Feb. 10th), and on Mind and Man, by Prof. G. Elliot Smith (March 24th). Among the courses of lectures to be held in the afternoons is one on Recent Advances in Genetics, by Prof. J. B. S. Haldane, and one on the Evolution of the Mind, by Prof. Elliot Smith, beginning respectively on Jan. 19th and March 16th.

Institute of Medical Psychology

A lecture on Occupational Therapy, followed by a demonstration of the various methods by which it can be applied to physical and mental illness, will be given at the new premises of this institute, 6, Torrington-place, London, W.C., at 3 P.M. on Saturday, Feb. 4th. Twenty lectures (for members of the medical profession only) on Psychological Types and Mechanisms, forming an introductory course of psychological medicine for practitioners, will be given on Wednesdays, from Jan. 18th to March 22nd. The lecturers will be Dr. E. Graham Howe (3 P.M.) and Dr. H. Crichton-Miller (4.30 P.M.). Tickets for the lecture and for the course should be obtained in advance from the honorary lecture secretary of the institute.

National Smoke Abatement Society

This society has sent to 130 local authorities a memorandum suggesting the establishment of further regional advisory committees similar to those which have for some time operated in greater London, the Midlands, the West Riding of Yorkshire, and the Manchester districts. It is suggested that local authorities should coöperate to form five new areas for Tyneside, Tee-side, North East Lancashire, Merseyside and South West Lancashire, and the Potteries. The existing advisory committees, which were formed with the assistance of the Ministry of Health, are endeavouring to secure greater uniformity in the administration of the law relating to the emission of smoke. Even greater importance is, however, attached to the preventive than to the punitive side of the work. The committees already in operation include among their activities the standardisation of methods of taking observations, the encouragement of training courses for stokers, and the issuing of certificates for efficiency, the encouragement of better relations between local authorities and manufacturers, and the collection of data respecting the latest developments in smoke prevention apparatus and appliances.

Births, Marriages, and Deaths

BIRTHS

LAWRENCE.—On Christmas Day, 1932, at Ivanhoe, Old Stratford, Northants, the wife of Dr. E. D. Lawrence, of a daughter.

ROTHERY.—On Jan. 2nd, in a London nursing home, the wife of Dr. Basil Rothery, of a son.

MARRIAGES

NEALE—WRIGHT.—On Dec. 24th, very quietly, at St. Pancras Parish Church, Arthur James Reginald Neale, of Croydon, to Caroline Isobel Wright, M.D., of London.

SANDERSON—DE LA HEY.—On Dec. 21st, at Folkestone, Geoffrey Hugh Sanderson, M.A., M.B., of Horncastle, Lincs, to Noreen Elizabeth, daughter of W. H. P. de la Hey, Courteen Hall, Simla, India.

DEATHS

COVEY.—On Dec. 26th, Edward Alan Rustat Covey, L.R.C.P., L.R.C.S., L.S.A., of Linden-grove, Shirley-road, Southampton, aged 65.

HADWEN.—On Dec. 27th, at Brunswick House, Gloucester, Walter Robert Hadwen, J.P., M.D., M.R.C.S., L.R.C.P.

KEEN.—On Christmas Day, 1932, Dr. Agnes Keen, of London-road, Bromley.

ROSE.—On Dec. 25th, at "Grey Walls," Seaford, Capt. Frederick George Rose, M.A., Ph.D., R.A.M.C., late H.M. Consul, Stuttgart, aged 65 years.

SHEPHEARD.—On Dec. 31st, 1932, Philip C. Shepheard, J.P., M.R.C.S., L.S.A., of Abbots Hall, Aylsham, Norfolk, aged 94. R.I.P.

WILSON.—On Dec. 27th, at St. Thomas's Hospital, London, William Craig Wilson, B.A., M.B., Ch.B., of Cleveland-gardens, W., aged 27.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

OBITUARY

SIR ALEXANDER HENDRY, K.C.V.O., M.D. Edin.

FOR 22 years, ending last January, Sir Alexander Hendry was continuously associated with the Royal Household at Balmoral. He belonged to the neighbourhood, being born at Braemar in 1867, and was educated at Aberdeen grammar school before going on to the University of Edinburgh. Graduating in medicine in 1892, he was soon established in practice at Ballater, where he was to spend the rest of his life. He acted as certifying factory surgeon for the district, and was later medical officer for several parishes. In 1904 he began his medical attendance at Balmoral Castle, and six years later he was appointed surgeon apothecary to the Household there. He became a Member of the Victorian Order in 1911, and a Companion in 1924; promotion to knighthood followed in 1931. He was a justice of the peace for Aberdeenshire, and was elected provost of Ballater last year. He died on Dec. 29th at Aberdeen.

Sir Alexander Hendry married twice. His second wife, who survives him, is the daughter of the late Mr. George White, of Great Missenden.

WALTER ROBERT HADWEN, M.D. St. And.

Dr. Hadwen who died on Dec. 27th at his home at Gloucester, after being taken ill with heart trouble on Nov. 29th, had long been president of the British Union for the Abolition of Vivisection, and for many years laboured in the public advocacy of the repeal of the Vaccination Acts and the abolition of vivisection; but though opposed to scientific medicine he supported movements connected with temperance, food, hygiene, sanitation, education, and burial laws. He was a magistrate, and did much municipal work in Gloucester. Born at Woolwich in 1854, he was the eldest son of Mr. W. R. Hadwen, of Burnham, Somerset. He was educated at a private school and Bristol University College, and 15 years later took up medicine when he entered the Bristol medical school, and qualified M.R.C.S., L.S.A., in 1893. Although so late in the field, he became a prizeman and gold medallist in surgery at the Bristol Royal Infirmary, after having taken prizes in physiology, operative surgery, pathology, and forensic medicine. He obtained the M.D. St. Andrews in 1897. He travelled widely, and his published works cover a range of subjects outside the practice of medicine. His name was prominently before the public in 1924, when he was acquitted at Gloucester Assizes on a charge of manslaughter, based on his treatment of a 10-year-old girl, alleged to have been suffering from diphtheria. The trial gave opportunity for him to assert disbelief in the germ theory of disease.

THE LEBANON HOSPITAL.—This mental hospital, which is situated on the road from Beyrout to Damascus, has this year treated 373 patients. The hospital comprises nine houses, with workshops, hall, laundry, and other buildings. Sixty beds have been added during the last two years, through legacies and special donations, bringing the total number up to 252. Every house that is opened brings a new stream of applicants for admission, so that, as fast as buildings can be provided, they are filled. The hospital is now in urgent need of two further houses (40 beds each), one for men and one for women. New houses, once built, are now almost self-supporting by the fees of the richer patients and the capitation fees paid by the Lebanese Government for the very poor. It is impossible, however, to obtain money locally for capita expenditure.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
Tuesday, Jan. 10th.—5 P.M., Therapeutics and Pharmacology: Medicine: Special discussion on the Treatment of the Anæmias. Openers: Dr. L. J. Witts and Prof. Stanley Davidson.
Wednesday.— [illegible] tion of Proctology. [illegible] ig. Films; Sir Charles [illegible] Anastomosis of Colon. [illegible] : Operation for Fistula. Cases and specimens: Sir Charles Gordon-Watson: 1. Megacolon Resected. Mr. J. P. Lockhart-Mummery: 2. Epithelioma of Anus Treated with Radium. 3 and 4. Imperforate Anus. 5. Congenital Deformity of the Anus. 6. Lipoma of the Colon. Mr. W. B. Gabriel and Mr. Frederick Roques: 7. Carcinoma of Rectum Invading the Vagina and Uterus, and Treated by Perineal Excision and Vaginal Hysterectomy. Mr. Vaughan Hudson: 8. Villous Papilloma of Transverse Colon.
Thursday.—8 P.M., Tropical Diseases and Parasitology. Paper: Prof. C. D. de Langen (Batavia): Studies on Blood Regeneration and Blood Diseases in Java. Medicine: Pathology. Members of the Sections of Medicine and Pathology are specially invited to attend.
Friday.—8 P.M., Ophthalmology. (Cases at 8 P.M.) Mr. Tudor Thomas: Corneal Transplantation of an Opaque Cornea (with demonstration of the case).

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
Monday, Jan. 9th.—8 P.M., Pathological Evening.

HARVEIAN SOCIETY OF LONDON.
Thursday, Jan. 12th.—8.30 P.M. (at 11, Chandos-street, W.), Annual General Meeting. Mr. C. P. G. Wakeley: The Rôle of Specialisation (Presidential address).

SOUTH-WEST LONDON MEDICAL SOCIETY, Bolingbroke Hospital, Bolingbroke-grove, Wandsworth Common.
Wednesday, Jan. 11th.—9 P.M., Mr. F. N. Doubleday: Dental Infection as a Source of General Disease.

WEST LONDON MEDICO- [illegible]
Friday, Jan. 13th.—7.15 [illegible] Brompton-road), Di [illegible] discussion, at 8.30 [illegible] Mr. Timbrell Fisher.

PADDINGTON MEDICAL SOCIETY.
Tuesday, Jan. 10th.—9 P.M. (at the Great Western Royal Hotel, Paddington), Dr. T. Drummond Shiels: The Objects and Methods of the British Social Hygiene Council. Visitors are invited.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN, 17, Bloomsbury-square, W.C.
Tuesday, Jan. 10th.—8.30 P.M., Dr. G. Roche Lynch: Poisons and their Effects.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
Monday, Jan. 9th, to Saturday, Jan. 14th.—Lambeth Hospital, Brook-street, S.E. Frid., Demonstration of selected cases of general medical and surgical interest at 2 P.M.—Open only to Members and Associates of the Fellowship of Medicine.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.
Monday, Jan. 9th.—10 A.M., Medical Wards, Skin Dept., Genito-urinary Operations. 2 P.M., Medical, Surgical, Eye, and Gynæcological Out-patients, Surgical Wards, Operations.
Tuesday.—10 A.M., Medical Wards, Surgical Demonstration. 2 P.M., Medical, Surgical, Throat, Nose, and Ear Out-patients, Operations. 4.15 P.M., Lecture, Mr. Tyrrell Gray: The Rôle of the Mesentery.
Wednesday.—10 A.M., Medical Wards, Children's Out-patients. 2 P.M., Medical, Surgical, and Eye Out-patients.
Thursday.—10 A.M. [illegible] Fracture Demonstration. [illegible] Eye, and Genito-urinary [illegible] Lecture, Dr. Scott Pinch [illegible]
Friday.—10 A.M., S [illegible], Lecture: Therapeutics. 2 P.M., Medical, Surgical, and Throat Out-patients. Operations.
Saturday.—10 A.M., Throat Operations, Medical and Surgical Wards. Surgical and Children's Out-patients. The lectures at 4.15 P.M. are open to all Medical Practitioners without fee.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
Tuesday, Jan. 10th.—5 P.M., Sir E. Graham-Little: Cicatricial Alopecia.
Thursday.—5 P.M., Dr. W. J. O'Donovan: Stocking Erythroderma.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
Friday, Jan. 13th.—4 P.M., Mr. C. Gill-Carey: Rhinological Aspects of Asthma.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.
Thursday, Jan. 12th.—9 P.M., Mr. H. Edwards: The Treatment of Minor Injuries.

GREAT NORTHERN HOSPITAL, Holloway-road, N.
Tuesday, Jan. 10th.—3.15 P.M., Dr. C. C. Beatty: Demonstration of Cases.

ST. MARK'S HOSPITAL, City-road, E.C.
Thursday, Jan. 12th.—4 P.M., Mr. L. E. C. Norbury: Colostomy.

GLASGOW POST-GRADUATE LECTURES.
Wednesday, Jan. 11th.—4.15 P.M. (at the Western Infirmary), Prof. T. K. Monro: Medical Cases.

Appointments

City of London Maternity Hospital, City-road, E.C. Christie-Brown, R., M.S. Durh., F.R.C.S., Obstetric Surgeon; Dodds, R. L., M.B. Belf., F.R.C.S. Eng., O'Sullivan, J. V., M.D. N.U.I., F.R.C.S. Eng., and Blaikley, J. B., M.B. Lond., F.R.C.S. Eng., Asst. Obstetric Surgeons; Connell, J. G., M.R.C.S., Asst. Resident M.O.

Vacancies

For further information refer to the advertisement columns

Bolingbroke Hospital, Wandsworth Common, S.W.—H.P. At rate of £120.
Bolton Royal Infirmary.—H.P. £200.
Bury Infirmary, Lancs.—Sen. H.S. At rate of £200.
Central London Ophthalmic Hospital, Judd-street, W.C.—Sen. and Jun. H.S. £120 and £100 respectively.
Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Hon. Second and Third Assts.
Dublin, Saint Michael's Hospital, Dun Laoghaire.—Ophth. S.
Enfield Urban District Council.—Two Asst. M.O.'s of Health. Each £300.
Evelina Hospital for Sick Children, Southwark, S.E.—Hon. Physician to Skin Dept. Also H.P. At rate of £120.
King Edward Memorial Hospital, Ealing.—Jun. Res. M.O. £150.
Leeds Hospital for Women.—H.S. At rate of £100.
Leicester [illegible] Surg.
London [illegible] *Great Ormond-street, W.C.*—Res. [illegible]
London Jewish Hospital, Stepney Green, E.—Second Radiologist.
Manchester, St. Mary's Hospitals.—Asst. M.O. for Children's Out-patient Dept. At rate of £150. Res. Obstet. O. for Whitworth-street West Hospital. £175. Also Three H.S.'s to Special Depts. Each at rate of £50.
Margate and District General Hospital.—Res. M.O. £150.
Market Drayton, Cheshire Joint Sanatorium.—H.P. £250.
Middlesex County Council.—Ophth. S. £2 12*s.* 6*d.* per session.
Middlesex Hospital and Medical School, W.—Medical Registrarship. £300.
Newcastle General Hospital.—Two H.S.'s and One H.P. Each at rate of £150.
Northwood, Mount Vernon Hospital.—Gynæcologist.
Nottingham City Mental Hospital.—Jun. Asst. M.O. £350.
Rotherham Hospital.—H.P. £180.
Royal Chest Hospital, City-road, E.C.—Physician for Out-patients' Dept.
Royal London Ophthalmic Hospital, City-road, E.C.—Gifford Edmonds Prize in Ophthalmology. £100.
Royal Northern Hospital, Holloway, N.—H.P. At rate of £70.
St. Albans, Herts, Cell Barnes Colony for Mental Defectives.—Deputy Med. Supt. £600.
St. Giles' Hospital, Brunswick-square, Camberwell, S.E.—Res. Med. Supt. £1300.
St. John's Hospital, Lewisham, S.E.—Hon. Skin Physician. Also Res. H.P. and Cas. O. Each at rate of £100.
St. Stephen's Hospital, Fulham-road, S.W.—Clin. Asst. At rate of £100.
Society for Prevention of Premature Burial.—Medical Examiners.
Southampton Children's Hospital and Dispensary for Women.—Res. M.O. At rate of £150.
South London Hospital for Women, Clapham Common, S.W.—Surg. Reg. 50 gns. Out-patient M.O. and H.S. Each at rate of £100.
Tilbury Hospital, Essex.—H.S. £140.
University College Hospital, Gower-street, W.C.—Hon. Asst. Surg. to Ear, Nose and Throat Dept.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Hon. Surg. Reg., H.P., and H.S. Each at rate of £100. Also Out-patient Anæsthetist. 10*s.* 6*d.* per attendance.
West End Hospital for Nervous Diseases, Gloucester-gate, N.W.—Sen. and Jun. H.P.'s. At rate of £150 and £100 respectively.
West London Hospital, Hammersmith, W.—Cas. O. At rate of £250. Also Asst. Gynæcologist.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Hon. Anæsthetist. One guinea a visit.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Newport, Isle of Wight.

NOTES, COMMENTS, AND ABSTRACTS

THE MEDICAL SCHOOLS AND THE NATION'S HEALTH[*]

BY JAMES YOUNG, D.S.O., M.D., F.R.C.S. EDIN., F.C.O.G.

GYNÆCOLOGIST TO THE ROYAL INFIRMARY, AND PHYSICIAN TO THE ROYAL MATERNITY HOSPITAL EDINBURGH

[Dr. Young began by pointing out that the due relation of medical schools and the medical profession to recent developments in public health can be understood only if we keep prominently before our minds the sources from which these have sprung, and the factors responsible for the rapidity of their growth within the past few generations. He then described the great hygienic movements of the nineteenth century, as the community awoke to the squalor and filth which accompanied the rising industrial age. A reduction of the death-rate and a prolongation of average individual life became associated with the efficient disposal of sewage and the provision of a pure food- and water-supply. But he found these things to owe little to the medical schools, though medicine played its part in the advance, particularly by discovering the bacterial nature of infectious disease. Modern sanitation, as the dominating achievement of the nineteenth century, he considered due in the main to the vision and energy of public men and corporations, and not to organised medicine. He asked his hearers to reflect upon the fate of communities to-day if the defences of hygiene were withdrawn, when all pestilences would be rapidly disseminated by modern methods of intercommunication; but inevitable though it was that the medical profession and the public should be pervaded with the spirit of prevention, he found the organisation and traditions of the medical schools not to promote that spirit. He continued :—]

The Emphasis upon the Curative Aspects

It is a matter of commonplace that the emphasis in medical teaching is placed upon the curative aspects, that is, the training is so organised as to prepare the doctor for the recognition and treatment of frank disease. His preliminary years are spent in the study of the *medical sciences* to provide him with that framework and that scientific attitude necessary for his later approach to the clinical subjects embraced within the *medical art*. The function of the medical art, as we understand it, is the alleviation or the cure of disease, and so dominating has this therapeutic aspect become by the necessities of tradition and evolution that it is difficult to see how such a conception as the elimination of disease by the protection of health can find for itself a place in such unfamiliar surroundings. And we must make no mistake in regard to the magnitude of its claims; it demands priority of position and broad space for its growth and expansion.

Where, in our schools organised for the study of disease, can we find a place for the gospel of health? Where, in a scheme leading from chemistry and anatomy and physiology through pathology and the post-mortem room to clinical medicine and clinical surgery, can we break the chain to accommodate the new evangel? It would be hard to expect the professors of medicine and surgery to adjust themselves to the rôle of hygienists, for are they not the completed product of the schools of disease, and have they not reached their academic distinction and power just because they are proved exponents of its teaching, or have discovered, perchance, newer methods for the diagnosis and treatment of disease? And, if we thrust upon their shoulders, already heavily burdened with the load of disease, the added task of hygiene, as some with more enthusiasm than a sense of fitness have urged, where will we have them begin, and how will they proceed?

Modern Specialism and the Narrow Outlook

In this connexion we have only to reflect a moment to recognise how increasingly pledged medical thought and tendency have become within recent years to a preoccupation with disease. For have we not, during the past few generations, unleashed a whole new host of ardent seekers in the field of the morbid? The growth of specialism, both in its rapidity and its extent, has become one of the most remarkable features of modern medicine. We may with justice describe the present era as that in which almost every organ and function in the body has evolved its own specialism and its own particular votary.

The general results of such a remarkable development must naturally be profound. To it we must in part look for an explanation of our present hospital impasse, because each such specialism has surrounded itself with an elaborate and expensive system of equipment, personnel, and remedial measures, and has flourished only because it has found a home within the walls of the wealthy organisation of our charity hospital, to which the greater part of the community has had perforce to turn in its time of need.

A further result of great significance is that the claims of the specialty in regard to the rapidity of its expansion, its technique, its literature, &c., are so insistent that it may, and often does, imply that the specialist must from his earliest days forsake the broad territory of medicine and devote himself entirely to the restricted field of his chosen craft. Once the die is cast it is inevitable that the more his life is occupied with his specialism the more does he lose touch with the general aspects of the medical art. A general practitioner friend of mine of wide experience and sound discrimination has aptly expressed the position by the remark that "the specialist is usually a bad doctor," and it is not difficult to see that in such an impeachment there must be a sound basis of truth. The circumstances of the specialist's life are prone towards a still further narrowing of outlook in that from the nature of his calling he is so frequently summoned to the patient only when the ailment is advanced and even terminal. This is probably specially true of the surgical specialties though it applies in considerable measure to those more purely medical. It thus happens that the preoccupation of specialism is apt to be largely with a cruder diagnosis and even more with a cruder treatment and to find small opportunity for the cultivation of that philosophic spirit that derives its chief exercise and its greatest satisfaction in the study of ultimate causes and in prevention.

It is in the nature of specialisation that it cannot easily escape from the limitations that it creates for itself. The danger is that in our admiration for the precision of its knowledge or the manipulative skill of its exponents we should forget the relative and topical character of its contribution. For the study of a separate organ receives its complete sanction only when it is related to the whole, and by the whole we mean the organism in respect, not only of its anatomy and its physiology, but also of its environment and its habits, its sociology, and those other agencies which by their interplay react on the health and well-being of the individual.

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[*] Abridged from the presidential address to the Edinburgh Obstetrical Society, delivered on Nov. 9th, 1932.

The outstanding triumphs of modern surgery have surrounded it with a glamour that has tended to exalt it above its proper sphere in the medical organon and to give to its votaries a place and power which is hardly commensurate with the degree in which their craft has contributed to an enrichment of the science and art of medicine in the wider and fuller sense. More significant, however, than such questions of pride of place, the movement thus symbolised has tended to a corresponding depreciation of the value of general medicine and of the paramount importance of the general outlook. It has succeeded in establishing the specialisms in a place of primary authority when their function should be contributory and ancillary. At the best the function of specialism is that of the expert witness, at its worst it may degenerate unless controlled into a cruel and merciless exploitation of the public. It may inspire the carrying out of surgical operations that, based upon a limited diagnosis, are condemned to failure and it may lead to the extirpation of diseased organs by surgeons who pursue their routine work unmindful of the factors which in the community may be breeding *in perpetuo* material for their scalpel.

The supreme task of the next generation, alike in the interest of health ideals as of curative medicine, is a readjustment of our outlook in these matters. It is the opinion of many who have been disquieted by present medical tendency that the salvation of our art in its great duality of function is to be found in one way only—namely, by the creation of a body of well-trained practitioners to whom will be handed back the authority often usurped by those who are ill-equipped to exert it with judgment and skill. There can be no question that only in so far as we recover for the mind at the centre the supreme decisions in regard to health and disease will we lead to a reintegration of much that is disruptive in modern medicine and only in this way will we recapture for the profession its soul and, for the public, its safety.

[Dr. Young here dwelt on the great effort of James Mackenzie to assess the extent to which disease is really capable of diagnosis, and continued :—]

Failure of Medical Schools

There is no more eloquent sign of the inability of the medical schools as at present organised to exercise creative leadership in these matters or even to accommodate the ideals of preventive hygiene than the nature of the reception which some of the new health movements have received at their hands. Take, for example, those national aspirations for the protection of child life and child welfare, aspirations that owe their genesis in the main to a social conscience stirred by the amount of ill-health revealed in school-children when, consequent upon the enactment of compulsion in education, they first came under the organised supervision of the community. This movement had grown to be national and it had become an important charge on municipal health activities before it had created a ripple on the surface of organised medical opinion. It was only as recently as 1923 that out of deference to this strong social conviction the General Medical Council added the subject of infant hygiene to its recommendations for the revised medical curriculum. Despite the pressure reaching them from such different and such influential sources and the great opportunity presented to them of identifying themselves with the most important of all health movements, that directed towards the young child, the medical schools even now make for the most part only a very inadequate provision for the teaching of their students in matters of infant health. It has been left to the public authorities through their child welfare clinics and such independent bodies as the Mothercraft Training Society to explore the great new field presented by the healthy child and to garner for themselves the knowledge required for the expansion of such communal efforts. It is unfortunate that in regard to this beneficent social awakening to the value of child life and health the organised medical profession has lost a great chance of leadership.

As a further instance of restricted vision and the difficulty of our medical schools to align themselves with health-saving activities, let us take that world-wide movement for the protection of motherhood. It has long been evident that one essential step towards an alleviation of the dangers of childbirth is *an improvement in the teaching of our medical* students in midwifery. In the past this has been carried out by the schools in a manner sometimes described as scandalous. Despite the gravity of the issues involved, despite the widespread social disquietude provoked by the spectacle of so many young and healthy women annually lost or hurt in the performance of a physiological act, relatively few schools have yet found it possible to make provision for the bare teaching requirements.

The chief reason advanced for the delay in providing adequate teaching in midwifery and child health is the already crowded character of the medical curriculum and the lack of time available even for such an urgent need. There is, of course, considerable truth in an objection based upon the multiplication of the specialisms that have demanded inclusion in the teaching programme. At the same time there is reason for the view that, apart from such considerations, the curriculum has acquired a rigidity that has deprived it of the capacity of responding to the needs of each new age. It is, for example, often pointed out that botany, which owed its original inclusion to the fact that so many of the drugs used in medicine were derived from the vegetable kingdom, can no longer justify its retention on such grounds. It is the opinion of many, also, that anatomy has a quite inordinate amount of time allotted to it and that the full purpose of the admittedly important part this science must always retain would be served were a shorter period appropriated for its study. There can be little doubt that the overwhelming place sometimes claimed for anatomy has its origin in the position this subject has occupied in the historical development of the medical art. It was, in a sense, the first and, for long, the only medical science. We are apt to forget that the time has long passed when its association with anatomy gave to medicine its only claim to science, when, indeed, the medical art was compounded of anatomy and obscurantism.

It is thus arguable that the difficulties facing the medical schools in the way of making room for new subjects as these arise in the evolution of our craft spring, at least in part, from that same lack of resilience to the impact of new ideas to which we have been directing attention in the preceding pages. As a further example of this same irresponsiveness to big preventive ideals, let us take the attitude of the schools to the subject of nutrition, that most pervasive of all the factors of health. Where, in our schools, do we find this expounded with the completeness and thoroughness which it demands? Can we conceive of any subject which is more suited for earnest study by our great schools or one which offers to them such an opportunity for creative leadership and instruction? The extent of the influence wielded by nutrition in the mental and physical welfare of the community it is impossible to overrate. In a manner the very essence of health is sound nutrition and of disease faulty nutrition. From the antenatal period onwards through infancy and childhood this influence is supreme and the ultimate individual in his reactions and his resistance to his environment, including the extrinsic factors of disease, is, in a real sense, a product of his nutrition.

Who can say how many of the diseases of our present civilisation spring from the food we eat? Enough has already been learnt to suggest that the dental caries so typical of our race springs predominantly from the vitiation of the processes of teeth formation in the unborn fœtus or in infancy as a sequel of dietetic deficiency. Rickets is a disease of deficiency. Tuberculosis is in great part a disease spread by our infected milk-supplies. Dyspepsia, infection of the tonsils, rheumatism, heart and kidney disease, and a host of other morbid states that can be mentioned, who is to say how many of these are essentially the products of faulty nutrition? And of the "undiagnosable" diseases of Mackenzie, comprising some 60 per cent. of all diseases according to this eminent medical philosopher, in how many is the key to their secrets to be found, not in the abstruse biochemical or immunological investigations that engage the energies and the intellects of our laboratories, but in the far-reaching influences of racial nutrition?

It is true that during the past generation much research of outstanding value on nutrition has emerged from medical laboratories. The work of Hopkins, Mellanby, and others has opened up a new epoch in the study of the subject. Nevertheless, the scientific progress which such investigations connote has been the product of isolated laboratories and the work of isolated individuals rather than the outcome of an organised effort springing from an appreciation by the schools of the great significance of the question. Doctors set out on their public career largely ignorant of its far-reaching importance, and how could it be otherwise when to their teachers, committed by the nature of their calling to an overwhelming concern with disease, the chief interest of nutrition arises from the manner in which it contributes to the production of such conditions as obesity, diabetes, and so on? The part played by nutrition in the determination of the health and growth of the individual from the intra-uterine period onwards throughout life, its influence on the industrial and social welfare of the race, the extent of the known and the fascinating fields of the unknown still waiting to be explored, to these and kindred subjects the student's mind had never been directed because there had been no teacher to whom this great opportunity had been presented and on whom this great responsibility had fallen.

(*To be concluded*)

INSTRUCTION ON SEX QUESTIONS

THE bulky but original writings upon the sexual question of Havelock Ellis, Hirschfeld, Westermarck, the various schools of psycho-analysis, K. B. Davis, R. L. Dickinson, and others, continue to be popularised in small volumes by writers of varying degrees of competence and erudition. Some of the books which reach us are written for children; others for adolescents, for brides and bridegrooms, for religious persons, and for the nondescript general public.

As is pointed out in a preface by Mr. Norman Haire, editor of the Library of Psychology and Sexology Series, Dr. Evans is an American who, writing for an American public, mixes science, religion, and sentiment in his book.[1] This is a somewhat rhetorical exposition of the part which should be played by the husband in his sexual approaches to his wife. The author's chief aim would appear to be to interpret to a well-meaning but stupid man the timidities and inhibitions which characterise the average woman's attitude to sex, and which, unless taken into account by her husband, will spoil her married life. The author hopes these fears will be dissipated if the young wife will sit down by her husband and read the pages of his book which begins with a description of the nervousness of the young bride on the first night of her marriage, and ends with an account of the positions in which coitus may take place.

In explaining how a book entitled "How I Was Born"[2] (which is intended for adults and not, as the title might suggest, for children) came to be written, Dr. Bryan makes an astonishing statement. He says that at the annual conference of the British Medical Association held at Eastbourne in 1931, a demand was made not only by doctors, but by eminent churchmen and by other well-known people, that the mysteries of sex should be cleared up in a plain and wholesome exposition by a medical man. After a year had passed, writes Dr. Bryan, no volume of reasoned explanation of these so-called mysteries had been placed before the public, and his book was written to fill the gap. The unawareness which the author reveals of the torrent of such "wholesome expositions" which has been let loose upon the public since the war, is matched by the apparent ignorance displayed in several of the 22 chapters of the book of the literature of the subjects therein expounded. Moreover, the reader is informed in a preface that the book is "not written with profound gravity but with a light touch which, while it may bring a frown to the few, will make it more readable to the many." While saying little about the psychological aspects of sex or marriage, it contains chapters full of anecdotes on castration, hybrids, hermaphrodites, and virginity. It is difficult to see to what class of reader this book will prove useful, unless to those in search of after-dinner stories.

A third book,[3] by Dr. Douglas White, aims at introducing the reader to "a fresh outlook on sexual questions which has mostly developed since the beginning of the century." It is, in fact, a praiseworthy attempt by a medical man with religious leanings to enunciate a philosophy of the sexual life in terms of modernist Christianity; or, in the author's words, to suggest "such an outlook on sex morality as may make an appeal both to the rational, ethical, and spiritual nature of those who desire to think and act in accordance with the highest ideals of human life." This book will probably meet the requirements visualised by the ecclesiastics who addressed the British Medical Association at Eastbourne, better than would the preceding one.

Dr. Wright states that her book[4] has the object of building up in young people "an attitude of mind towards sex which will view the whole question against the background of evolution in plant and animal life." This purpose is well fulfilled. The volume is abundantly illustrated, and is simply divided into four chapters entitled: sex in plants;

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[1] Man and Woman in Marriage. By C. B. S. Evans, M.D. International Library of Psychology and Sexology. London: John Lane, the Bodley Head Ltd. 1932. Pp. 79. 5*s*.

[2] How I Was Born. By Cyril Phillips Bryan, M.B., B.Ch., B.A.L. London: John Bale, Sons and Danielsson, Ltd. 1932. Pp. 105. 5*s*.

[3] Modern Light on Sex and Marriage. By Douglas White, M.D. Modernist Series. London: Skeffington and Sons, Ltd. 1932. Pp. 128. 3*s*. 6*d*.

[4] What is Sex? An Outline for Young People. By Helena Wright, M.B., B.S. London: Noel Douglas. 1932. Pp. 172. 5*s*.

sex in animals; sex organs and their growth in human beings; and psychological development of sex instinct and its control. The last chapter raises some delicate questions about which there is as yet no formulated medical opinion, among them that of masturbation. The author's distinction between "harmless masturbation" which disappears of itself, and harmful masturbation which may produce physical disease of the sex organs, will not be accepted by those medical psychologists who hold that the injuriousness of the practice depends on psychological rather than on physical factors. Nevertheless, Dr. Wright's book could safely be given by parents to their sons or daughters when these reach adolescence.

APPLYING KNOWLEDGE TO INCREASE HAPPINESS

THE VALUE OF "AWARENESS"

SOME remarks made by the Regius professor of physic at Cambridge at a reception held last month at Institute of Medical Psychology, and briefly abstracted in our columns at the time,[1] contain a timely message for the New Year. "It has been said that the French rationalism of the eighteenth century cleared the ground for the upbuilding of natural science in the nineteenth. We can therefore understand," said Prof. Langdon Brown, "why nineteenth century science was inevitably materialistic. But that century also saw the romantic revival. There were consequently two diametrically opposed tendencies which had to be reconciled somehow. It was achieved by a hard core of materialism covered over by a veneer of romanticism. Changing the metaphor, the nineteenth century made for its goal with the aid of blinkers. But however much blinkers assist in concentrating attention on the goal, they prevent the wearer from seeing what is overtaking him. This may be a help to a horse, but it is a disadvantage to a man. The nineteenth century had no conception of what was overtaking it.

"The note of the twentieth century on the other hand is 'awareness.' It is much more aware of and sensitive to its environment. At present, however, it is only half aware. The blinkers are down, but no real adjustment has as yet been made. Hence there is great unhappiness. The old values have been swept away, without satisfactory new ones to take their place. If I didn't feel that a more complete awareness would help to remedy this, I should despair that we should be able to achieve anything at this institute. But I do most emphatically believe that we can do much by helping sufferers to understand more of the way in which their minds and emotions work. I was recently reading Sir Arthur Keith's description of his amazement when he found that his account of evolution was met by the mental attitude of Dayton, Tennessee. We have to remember that in matters of psychotherapy most of the patients that come here have the mental attitude of Tennessee, and we have to start from that point. I do not practise formal psychotherapy," Prof. Langdon Brown went on, "but I have been driven by sheer force of experience to realise the need for a more psychological approach to medicine. I was brought up in a most materialistic age of medicine, and only slowly came to realise the inadequacy of such an attitude. I found that quite as many people were ill because they were unhappy, as were unhappy because they were ill. So anxious were the former group to avoid that favourite diagnosis of 'just nerves' that they produced physical symptoms to account for their distress; yet the symptoms were not consistent with any organic disease, though they were often consistent with a disturbance of the sympathetic—i.e., the emotional, nervous system.

"To the patient who said 'I should be so ashamed if it is just nerves,' my usual reply was something along these lines. When I first went into the dissecting room, still under the impression that 'just nerves' meant just an imaginary illness, I saw a dissection of the brachial plexus. I thought that if a man's heart or lungs could go wrong, there was no reason why a complicated network like this plexus should not go wrong also. Then I go on to explain that this is not an exact illustration—for it is not a disturbance of these large nerve trunks which produces the symptoms he complains of, but the tiny branches between one nerve-cell and its neighbour. These particularly belong *to the association cells, and the point which* distinguishes the human brain from that of the lower animals is its wealth of such association cells. Why then, I ask, should you be so ashamed of something going wrong in what is so essentially a human characteristic?

In this way I can often pave the way for their being more receptive of psychotherapy. The illnesses dealt with at this institute are not imaginary, though they are connected with the image-making part of the brain. They often depend on the reactions between themselves and their nearest who ought to be, but are often not, their dearest. These emotional reactions are often painful, because they are only half-aware ones, and the unfavourable environment prevents satisfactory adjustments from being made. I often used to think, looking at the packed rows of patients in the out-patient room, that a lot of the good they undoubtedly receive from going to hospital was the opportunity it gave them of unburdening themselves to their neighbours, though they attributed it more to the bottle of medicine they were given.

"This institute," Prof. Langdon Brown concluded, "aims at scientific use of this unburdening and at skilled explanation of the symptoms resulting from these disagreeable and painful reactions arising from uncomprehended sources. It provides not only for proper treatment of nervous symptoms, but ensures that organic disease as a possible cause for such symptoms should not be overlooked. The work done here is unique, and marks a change in the whole point of view of medicine. It could thus assist in alleviating much misery and unhappiness so prevalent to-day."

DRIED MILK WITH ADDED IRON

THE firm of Ambrosia Ltd., Brighton Chambers, Denman-street, London, S.E.1, produces Ambrosia, a full cream Devonshire dried milk, the process of preparation not, it is stated, impairing the vitamins in fresh liquid milk. The firm have now placed on the market a combination of Ambrosia with iron ammonium citrate, designed for the treatment of anæmia in infants, nursing mothers, and other subjects where this form of nutrition is indicated. The preparation, to which, if necessary, extra vitamin D can be added, meets the recommendations in regard to the nutrition of infants contained in the recent circular letter from the Ministry of Health through its advisory commission on the subject.[1] The iron ammonium citrate added to the reconstituted Ambrosia products is to be prescribed for adults in the dose of grs. 10 per half pint, the suggested dose for infants being gr. 0·29 per ounce. The added vitamin D can be supplied in the preparation at an equivalent in antirachitic value to a teaspoonful of high grade cod-liver oil to one pint of milk. We are informed by the proprietors that they have received from various infant welfare centres evidence of the satisfactory employment of the preparation.

ENTERTAINMENT FOR THE BLIND.—From time to time we have referred to the excellent work which Dr. F. W. Alexander is doing for the blind. He has endeavoured to simplify the task of learning Braille; he has proposed a useful method of duplicating Braille broadsheets; and he has enlisted the aid of handicraft workers in making various kinds of puzzles (THE LANCET, 1931, i., 1006; 1932, ii., 224). He is now turning out quantities of literary puzzles in Braille—anagrams and the like—which will bring welcome employment to the leisure hours of blind people who can appreciate this type of entertainment. Those in touch with suitable recipients for such puzzles should apply to Dr. Alexander at Bankside, Ferry-road, Teddington, Middlesex.

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[1] THE LANCET, 1932, ii., 1360.

[1] THE LANCET, 1932, ii., 1028.

ADDRESSES AND ORIGINAL ARTICLES

PHLEBITIS *

BY A. DICKSON WRIGHT, M.S. LOND., F.R.C.S. ENG.
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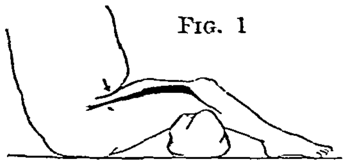
PHLEBITIS is almost entirely a disease of the lower extremities, where the veins are subjected to higher pressures and stagnation of the venous blood occurs from the effect of gravity. In varicose veins, the stagnation and pressure are more marked and phlebitis consequently more frequent.

Rest in bed increases the stagnation in the veins of the leg, because of the cessation, to a great extent, of the muscular contractions, which are so important an aid to the venous flow. Frequently, as in pneumonia, the sitting position maintained for a considerable period of time naturally increases the pressure in the veins of the legs. If, in addition, the patient is obese or pregnant an abdominal "dewlap" hangs down and presses upon the femoral veins in Scarpa's triangle (Fig. 1). In the dorsal recumbent position, the venous flow is also interfered with by the pressure in the gluteal region, causing the muscles to be squeezed into the pelvic foramina, and thus obstruct the gluteal veins. It can be realised how an air ring would be more liable to cause venous stagnation in this way (Fig. 2). The femoral vein in the front of the leg is safe from pressure, but not so with the posterior tibial pressed against the intermembrane by the calf muscles (Fig. 3). The osseous "donkey" pillow under the knee presses upon the popliteal veins and is definitely a harmful appliance (Fig. 4). Phlebitis of the lower part of the posterior tibial vein is common after operations, and I have often observed a connexion between tender indurations in the lower calf and post-operative lung infarcts.

FIG. 1



The abdomen enlarged by pregnancy, tumour, or obesity causes obstruction of the femoral vein in sitting position.

Many Possible Causes

Phlebitis is well known as a decubitus complication in certain conditions :—

(1) The *puerperium* probably provides the largest number of cases. It must be noted that the inflammation and thrombosis may occur in the deep veins, the normal superficial veins, or varicose veins, and may vary in its extent. The title of "milk leg" or phlegmasia alba dolens is often applied rather indiscriminately to all these conditions, a more precise diagnosis is essential both for treatment and prognosis.

(2) *The post-operative period.*—As in the puerperium, there is a greater tendency for the blood to clot intravenously because of the escape of clotting activating substance into the circulation, the result of trauma, and because of the 100–200 per cent. increase of blood-platelets as demonstrated by Howel Evans of Liverpool. The subjects of Cæsarean section and of splenectomy have to run a double risk.

(3) Fractures of the lower limb have to undergo prolonged immobilisation, and always result in considerable venous thrombosis.

(4) Medical cases provide a large quota and an analysis of 100 consecutive cases gave the following percentages: typhoid and paratyphoid 56 per cent., pneumonia 32 per cent., influenza 7 per cent., malaria 3 per cent., gout 1 per cent., and typhus 1 per cent.

In certain other conditions, phlebitis occurs as a complication without the patient being in bed :—

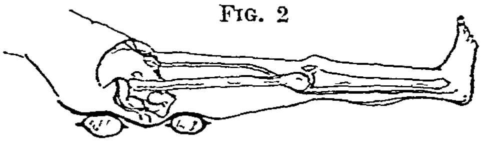
(1) *Pregnancy.*—I have seen a number of cases, mostly in varicose veins. I have recently encountered a case of fatal pulmonary embolism in the eighth month of pregnancy.

(2) *Trauma* to the leg or to a superficial vein frequently causes phlebitis.

(3) *Septic lesions* of the legs, especially insect bites.

(4) *Focal sepsis* in throat, mouth, or nose seems to be frequently connected with phlebitis, and should be looked for in every case which cannot be explained otherwise.

FIG. 2



Indicates how the pressure of an air ring is liable to cause pooling of venous blood.

(5) *Malignant disease* of the stomach.—The association of phlebitis in digestive disturbance is known as Trousseau's sign of malignant disease of the stomach. The tragic story of how Trousseau discovered his own fatal complaint by this sign is well known.

(6) *Thrombo-angiitis obliterans.*—Half the sufferers from this condition develop a painful *superficial* phlebitis of the leg at some time or other, and in many cases it is the first sign of the disease.

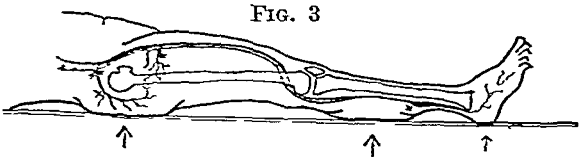
(7) *Thrombo-phlebitis migrans*, a chronic disease associated with phlebitis, occurring at intervals in all parts of the body. There is considerable pyrexia, and a low arterial blood pressure is a frequent association.

After the exhaustion of all possible causes, there still remain a large number of unexplained cases of phlebitis, the majority of which occur in varicose veins, and phlebitis must be looked upon as one of the commonest complications of varicosity.

Prophylaxis

Prophylaxis applies mostly to those cases occurring while the patient is in bed. The patient must not be kept too long in one position, if possible. The sitting position seems to be especially dangerous. Sleeping on the side at night in post-operative and puerperal cases should be allowed. The air ring should be avoided as far as possible, and the knee-donkey abolished entirely. Deep breathing and other exercises should be encouraged as suggested by Eugene Pool and L. R. Braithwaite. Waltman Walters, at the Mayo Clinic, recommends a high caloric diet and enough thyroid extract to produce temporary hyperthyroidism after operations. The trauma of the tourniquet seems to produce some cases, and the use of the pneumatic tourniquet will prevent these. The precaution of bandaging the legs firmly with Elastoplast bandages is of great value in patients who, having varicose veins, have to undergo an abdominal or other operation. The veins are kept obliterated by the pressure, and phlebitis in the varicose veins seems to be completely guarded against. Sometimes

FIG. 3



The pressure on the calf obstructs the posterior tibial vein.

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* An address delivered at a post-graduate course at St. Mary's Hospital.

the veins can be dealt with by injection as a preliminary to any deliberate operation, which should be done a month after the treatment of the veins. The best arrangement for the sitting patient is shown in Fig. 5. The patient sits in a bed arm-chair. The arms prevent slipping and also take up about 20 *per cent.* of the patient's weight. The backs of the thighs are supported by a wedge-pillow which is kept from slipping by a prolongation, upon which the patient sits. The popliteal and posterior tibial veins are thus saved from pressure. The soles of the feet rest upon a sponge rubber pad on a foot-rest adjustable on the well-known trellis system used for telephones. A thoroughly comfortable patient is secured by this arrangement, and one much less likely to develop phlebitis from pressure upon veins.

FIG. 4

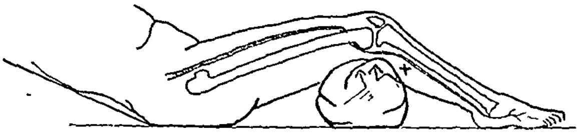
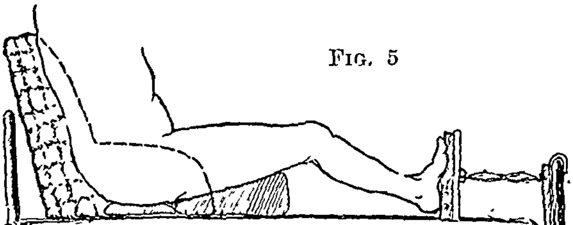


Diagram to show how the "donkey" pillow, under the knee, presses on the popliteal blood-vessels.

Treatment

Treatment of deep phlebitis.—When phlebitis is diagnosed in the posterior tibial vein, a firm elastoplast bandage to the knee will help to anchor the clot and prevent extension of the process up to the femoral vein. When the femoral vein is thrombosed, there is nothing to be done except to keep the patient horizontal, as the raising of the legs might predispose to embolism. Effortless action of the bowels is secured by paraffin purgatives and occasionally glycerin suppositories. The rubber bed-pan is used, with the patient lying down, and on no account must enemas or the sitting position for defæcation be allowed. After 14–21 days the swelling will start to subside, and the application of frequent bandages from foot to groin will hasten the return of the leg to normal proportions. When the swelling is all gone, the patient is allowed up with an elastoplast bandage on reaching well up the thigh. As the tendency to swell diminishes, the bandage is reduced in extent and finally ends below the knee. A change to Unna's stocking can be made later still, and finally an elastic bandage or stocking is worn. It is absolutely essential that all œdema should be controlled to lessen the weight of the leg and, more important, to help in the opening up of the collateral circulation. My experience with severe ulceration and eczema occurring from 7 to 25 years after femoral thrombosis convinces me that many of these cases must wear supports for ever. Future childbearing is best avoided after a white leg if possible, and in one case I recommended emptying of the uterus and sterilisation in a severe bilateral case the result of a previous pregnancy.

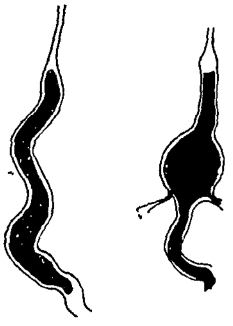
FIG. 5



The optimum position for the sitting patient.

Treatment of superficial phlebitis is a different problem because the clot can be prevented from travelling upwards by a rubber pad placed at its upper end (Fig. 7), and the inflamed vein firmly compressed by a tight elastoplast bandage below the pad. This tight bandaging seems a very painful process to the onlooker, but the rapid disappearance of the pain is most gratifying to the patient. The tight bandage expels the inflammatory exudates around and in the vein, compresses the clot and hastens its organisation. The patient is kept ambulant, even when there is a temperature, and this is generally gone in 48 hours by this method. When phlebitis occurs in varicose veins, keeping the patient up lessens the risk of embolism, because the current of blood is downwards in these veins. Moreover, the tortuosity and uneven calibre of the clots is a further safeguard against dislodgment (Fig. 6). Putting the patient to bed with an unsupported leg may lead to extension of thrombosis to the deep veins, with great risk of embolism. The bandage is kept on from two to six weeks, provided it stays in position and keeps tight. If, on its removal, some of the thrombosed veins are found to fluctuate, a stout needle should be inserted and the contents withdrawn and bandage reapplied. This hastens resolution and the contents can be examined bacteriologically, so as to make an early diagnosis should suppuration be developing.

FIG. 6



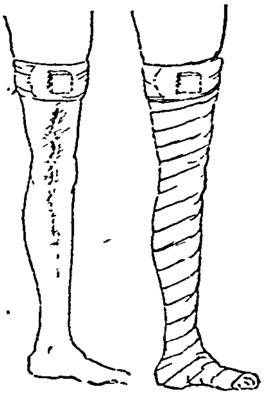
Shows how the irregular shape of the thrombi prevents dislodgment and also that the vein above the clot is of narrow calibre.

After six weeks of the bandage the venous indurations will be found to be practically gone and the attack of phlebitis a boon to the patient, in that the veins are obliterated and will not recanalise because of the pressure to which they have been subjected. I have treated many cases who have experienced in previous attacks the routine of six weeks in bed with belladonna or ichthyol locally, and I have not found one patient who preferred this latter method of treatment. There is no place for proximal ligation of veins in simple phlebitis of superficial veins as there is in suppurative phlebitis. I have found that the most certain way of producing phlebitis in a superficial vein of the leg is to ligature it. Proximal ligation only produces a fresh thrombosis, and if done close to the saphenous opening, the clot above the ligature may extend to the femoral vein.

I have been unable to comprehend the scientific basis of the elaborate ritual of spa treatment in the management of phlebitis, and cannot understand the value of the various glandular extracts and ferments in the treatment of a purely inflammatory disease. This compression treatment is also of the greatest value when an injection of sclerosing fluid produces an excessive reaction or the dreaded ascending phlebitis. It is also the best treatment when the *sloughing of the vein wall occurs or necrosis* of the tissues at the point of injection. If the leg is swathed tightly in an elastoplast bandage at the first sign of a necrosis and this is left on for a month or more the slough discharges itself, and the resulting ulcer epithelialises all unknown to the patient, who is thus saved much anxiety.

The condition of *periphlebitis* is often mistaken for true phlebitis. It occurs only in association with varicose veins and in the lower two-thirds of the leg. It is best described as a non-suppurative cellulitis of the perivenous tissues. It is a very painful condition. and the vein can generally be felt to be patent as it traverses the tender indurated affected area. The treatment is the same as for phlebitis except that the condition is no contra-indication to immediate injection of the varicose veins which should invariably be carried out. The condition of periphlebitis often leads to ulceration, the resulting ulcer being sometimes known as a "phlebitic" ulcer.

FIG. 7



Method of bandaging superficial phlebitis, with rubber pad and elastoplast bandage.

SCLEROSING INJECTIONS

The question of the injection treatment in patients who have suffered from phlebitis is a very vexed one. Firstly, in the case of obliteration of the femoral vein it is said that if you inject the varicose veins which develop many years after the disease you will rob the patient of the only veins that he has left. I have repeatedly found that this is not the case, and have come to the conclusion that these veins constitute an increased embarrassment to the venous return and their blocking by injection reduces instead of increasing the œdema, and helps to stave off the complications which arise from prolonged vascular imbalance in the legs.

Secondly, the occurrence of an attack of phlebitis in varicose veins is regarded by some as an absolute contra-indication to any sclerosing injections; others say that an interval of from one to five years must elapse before any injections are given. It is said that these cases are liable to fatal embolism and acute ascending phlebitis if injected. So it results that most of these patients are allowed to remain in possession of varicose veins which become the seat of constantly recurring attacks of phlebitis with all their attendant pain, anxiety, expense, and risk. I have in a large number of cases ignored the history of recent superficial phlebitis, dealing with the varicose veins by injection, and have had no case of embolism. I have had several cases of excessive inflammatory response from the injection, but this can be very satisfactorily controlled if treatment by firm strapping is instituted.

Summary

(1) Phlebitis is often a decubitus complication and can be, to a certain extent, prevented by attention to certain details. (2) Superficial phlebitis may be the first sign of three diseases: thrombo-angiitis obliterans, cancer of the stomach, and thrombo-phlebitis migrans. (3) Phlebitis is a common complication of varicose veins. (4) The treatment of phlebitis in deep and superficial veins is essentially different. In superficial veins, and especially in varicose veins, the risk of embolism and extension of the phlebitis is reduced by keeping the patient ambulant, and the resolution of the inflammation is hastened by compression. (5) Past femoral thrombosis is not a contra-indication to the injection of obvious varicose veins. (6) Varicose veins, the seat of repeated phlebitic attacks, should be dealt with by injection.

MASKED HYPERTHYROIDISM AS A CAUSE OF HEART DISEASE

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FOR many years it has been recognised that dysfunction of the thyroid gland may give rise to cardiac symptoms and these may be the only manifestation of that disorder. In recent years it has been appreciated that there exists a group of patients with cardiac disease, due to dysthyroidism, though they have not Graves's disease, and may never develop that condition. This group, to which the term "masked hyperthyroidism" has been applied, consists of patients in whom the heart is affected as a result of thyrotoxicosis. They are essentially heart patients and present themselves for examination complaining only of cardiac symptoms. Parkinson and Cookson,[1] from an investigation of the size and shape of the heart in goitre, cite a few cases lacking the classical symptoms of thyrotoxicosis, but with the main symptoms and signs cardiac; they are regarded as belonging to the group of masked hyperthyroidism. The diagnosis is often difficult to make, and at the present time we must be prepared to consider an assemblage of indefinite symptoms and signs. The symptoms point to the heart; the heart always shows some abnormality, and as a rule no other ætiological factor is present to account for the condition.

This investigation was begun as the result of the observation that certain patients, who for long periods had attended out-patient clinics complaining of attacks of palpitation without apparent cause, later and unexpectedly, developed signs of thyrotoxicosis. A search was then instituted for similar cases in which a dysfunction of the thyroid was giving rise to cardiac symptoms in association with minimal signs and symptoms usually associated with thyrotoxicosis. Selected patients have been observed over periods of nine to twelve months, many as in-patients and the remainder periodically as out-patients. Electrocardiograms have been taken at intervals and observations on the heart size have been controlled by orthodiagrams.

An attempt has therefore been made here to describe the cardiac and associated symptoms and signs, and to build up some sort of symptom-complex which may be more easily recognised. The importance of the condition is apparent on account of its relative frequency, its difficulty of diagnosis, and finally its amenability to treatment. For the sake of brevity only a few cases are described in this paper, but in the 15 patients observed the diagnosis has been justified by the results of appropriate medical or surgical treatment, and by the estimation of the basal metabolic rate. It may be mentioned in addition that several patients were seen in whom the cause of symptoms was an associated thyrotoxicosis although another pathological condition was present—e.g., hypertension.

As long ago as 1885 Charcot[2] described cases of the "maladie de basedow, formes frustes" in which one of the triad—tremor, struma, or exophthalmos—was not present. In 1887 Chvostek[3] divided these cases into three groups, one of which he called the monosymptomatic group. Levine and Sturgis[4] in 1924 described five patients all of whom had been treated for a number of years as primary heart disease. They showed that cardiac symptoms may be the only ones present in thyrotoxicosis, and stated that in the absence of the classical triad the diagnosis must be made on less obvious signs. All their patients were between 38–64 years of age, all complained primarily of cardiac trouble, all were alert, overactive, and with animated facial expression. Again, Levine and Walker [5] in 1929 stressed the fact that the thyroid gland may remain toxic for years without any sign of exophthalmic goitre, and yet affect the heart; and they mentioned that the degree of toxicity of the gland may vary from time to time. The prognosis if treated by iodine, followed later by operation, was said to be good, even when anasarca is present.

Hamburger and Lev [6] in 1930 reported five cases, all in patients past middle life, who were of apathetic appearance in direct contrast with the first series of Levine and Sturgis. Freund and Cooksey [7] noted the difficulty of diagnosing thyroid toxicosis in elderly patients as they rarely show any thyroid enlargement, and they reported five cases, watched for at least 18 months.

PATHOLOGY

The pathological changes in the heart brought about by thyrotoxicosis are the subject of much controversy. The three questions which arise in connexion with this problem are:—

(*a*) Firstly, the question as to whether dysthyroidism produces macroscopic changes in the heart, i.e., increase in size and increase in weight, when all other causes can be excluded. Opposing views are held by various authors. Parkinson and Cookson [1] state that in a series of 43 necropsies in goitre cases, about 50 per cent. showed cardiac hypertrophy, and in their clinical series in which the size of the heart was measured by X ray, 45 per cent. showed some enlargement. The younger patients and those with a shorter duration of symptoms showed no hypertrophy. The average heart weight was greater in those patients with established fibrillation than in those with a normal rhythm.

Hurxthal [8] found hypertrophy to be rare, and when it was present he ascribed it to coexisting cardiovascular disease. Hurxthal, Menard, and Bogan [9] were of the same opinion, and Rosler [10] found no departure from the normal size in the majority of his patients. Again, Lahey [11] expresses the view that when failure occurs in goitre it is due to the effect of thyroid toxæmia on a previously damaged heart. Hermann and F. Wilson [12] studying the ratio of ventricular weight to body-weight in a series of cases found this to be 0·00292, which is normal.

Table I. illustrates the size of the heart in 15 cases, as measured by orthodiagram. The method of measurement used is that of Dietlen, and though it is not put forward as an infallible method, the figures may be quoted.

In considering this table, it will be seen that in only two cases (Nos. 1 and 14) was there notable enlargement: in the former cardiac failure was present, whilst in the latter gross myocardial changes were revealed by electrocardiogram. Of the remaining five patients in whom the heart was enlarged, in three the enlargement was minimal. It must be borne in mind also that the average age of the series was 52 years, and that therefore no comparison can be made with measurements in series of cases of Graves's disease in whom the average age is, as a rule, much lower.

Only one patient died (Case 15), a woman aged 57, who had been the subject of attacks of paroxysmal auricular fibrillation for three years. In this case teleradiograms showed a very slight enlargement and this observation was later confirmed at autopsy, though the weight of the heart was only 9¼ oz. Another patient (see Case 2), a woman aged 57, had constant tachycardia of 120 for two and a half years and yet clinically and by X ray showed no enlargement of the heart.

TABLE I.—*Size of the Heart*

Case.	Transverse diameter of		E., P. or A.	Case.	Transverse diameter of		E., P. or A.
	heart.	chest.			heart.	chest.	
	cm.	cm.			cm.	cm.	
1	16·0	22·5	Yes	9	10·5	21·0	No
2	11·0	22·3	No	10	13·3	22·2	Yes
3	12·0	23·0	No	11	10·0	21·0	No
4	12·0	21·5	Yes	12	10·5	23·1	No
5	11·5	21·0	Yes	13	11·4	22·2	No
6	12·2	25·6	No	14	14·0	22·5	Yes
7	11·5	21·1	Yes	15	12·0	21·2	Yes
8	11·8	22·5	No				

E., P. or A.= enlargement, present or absent.

(*b*) The second question is whether microscopic changes are found in the heart in patients who die after showing cardiac symptoms. Again varying opinions are held. Goodall and Rogers [13] state that definite pathological changes can be seen under the microscope and that these changes are those of myocardial degeneration. Goodpasture,[14] Wilson,[15] Johnson,[16] and others also describe actual changes in the muscle-fibres themselves. Willius, Boothby, and Wilson,[17] however, hold the view that the post-mortem evidence is unconvincing and that "at necropsy insufficient evidence is disclosed to ascribe death to cardiac causes . . . ."

(*c*) Finally, if the changes described above do exist, naked-eye or microscopic, are they characteristic of thyroid disease? At the present time the answer to this question must be that they are not.

CARDIAC SYMPTOMS

Palpitation is the most constant symptom; and this is not commonplace palpitation, but is something which even in a sensible patient constitutes a genuine and besetting illness. All in this series complained of such attacks as their main symptom; one had frequent attacks for 11 years, another for 10 years, and the average duration throughout a series of 15 cases studied is 3⅔ years. The character of the attack of palpitation varies according to the heart action on which it is based; this may determine the method of onset and cessation, the exciting factors, and the duration of the attack.

The commonest objective basis for the attack is a simple tachycardia with which may be associated extrasystoles. In this type of case the palpitation may occur very frequently, many times in the 24 hours, be gradual in onset and offset, and be precipitated by exertion and emotion and relieved by rest. The presence of extrasystoles with a rapid pulse-rate, when these irregularities might be expected to disappear, is so often observed in these patients and is so unusual in other cardiac conditions that it may be of value in pointing to the thyroid as the ætiological factor. In view of the above observation, the extrasystole may assume a greater significance, but only in a patient suffering from attacks of palpitation in whom no other pathological lesion can be shown as the cause. In other words, it may be said that extrasystoles in association with a rapid pulse-rate in a patient suffering from attacks of palpitation for which no other cause can be found suggest that the thyroid gland is culpable.

Paroxysmal auricular fibrillation is another arrhythmia commonly associated with the condition and giving rise to the attacks; in these cases the palpitation is not so frequently recurrent as in the simple tachycardia with extrasystoles just described. The attacks are much more sudden in onset and offset, they occur at varying intervals, but seldom daily, and they are independent of exertion or emotion. These attacks may occur for a number of years and later be followed by an established fibrillation. Parkinson and Campbell[18] found 15 per cent. of 200 cases of paroxysmal fibrillation to be goitrous in origin. They further state that "the realization that goitre in almost any of its forms may be the cause of these paroxysms is of great importance." As has been said,[1] in patients without any ocular or nervous disturbances usually associated with thyroid dysfunction, fibrillation may result from the toxic action of a "very small or imperceptible goitre." Levine and Sturgis's[4] five cases all had paroxysmal fibrillation. Since the underlying cause is a toxic effect on the myocardium, it is reasonable to assume that any of the arrhythmias may occur. The type of arrhythmia present in the 15 patients studied was as follows:—

1. Simple tachycardia	4
2. Simple tachycardia with extrasystoles	4
3. Paroxysmal fibrillation	4
4. Ventricular extrasystoles in runs	1
5. Established filbrillation	2

Breathlessness, alone and apart from palpitation, is not a common presenting symptom unless the patient is not seen, or the condition is not recognised, until failure is present.

The association of anginal pain with thyrotoxicosis has been noted. Lev and Hamburger[6] reported cases, and Levine and Walker[5] consider that in these patients coronary artery disease must coexist, and that the added strain on the heart of a thyrotoxicosis renders its blood-supply insufficient and pain results, comparable in its method of production with the pain of angina of effort.

In the 15 cases of masked hyperthyroidism studied, the average age of which was 52 years, five patients gave a history of pain in the chest. In three the description of the pain was characteristic of angina pectoris; it was substernal, dull and heavy in character, and of a minute or two's duration only, and in all three its onset always coincided with the onset of an attack of palpitation.

CARDIAC SIGNS

Cardiac overaction is constantly present. It is usually, but not constantly, accompanied by tachycardia. Its presence may be detected in several ways. The character of the apex impulse is the most useful guide; on palpation it is found to be altered and the first impression which is given immediately is that the heart is abnormal. It is "sudden" in character—i.e., it is a short, quick, rather forcible impulse, and gives the impression that the organ is enlarged, although the impulse may be in the normal situation. This apex impulse is quite unlike the forcible, sustained heave of that in hypertension, but is similar in character to the apex-beat of the normal heart immediately after exertion or emotion.

The examination of patients was always carried out after they had been lying at rest for at least half an hour. In addition the cases were seen and examined often, and were thus accustomed to the routine, so that the element of excitement and exertion were as far as possible eliminated.

This "suddenness" of the apex-beat with the patient at rest, and even when the rate is slow, is of the greatest diagnostic importance. There may, in addition, be a systolic thrill at the apex.

Van den Bergh[19] emphasises the importance of cardiac overaction and considers it a most helpful sign because of its constancy in practically all cases of goitre toxicity.

Auscultation will usually reveal the first sound at the apex to be altered in character. It is louder, shorter, and slightly higher pitched than normal—it may be a little "blurred" so that a presystolic murmur is simulated. A short systolic murmur may be present; this murmur being oftenest maximal in the pulmonary area, where the second sound is often accentuated. Extrasystoles are commonly heard, sometimes in runs, or they may be so frequent as to render the rhythm most irregular.

Electrocardiographic examination, apart from recording the type of arrhythmia, has not proved of great help in diagnosis; occasionally the size of the P wave has been increased and has equalled that of the T wave, especially in lead II.

Radiography of the heart has proved of value. On looking at the heart as a whole, it is usually seen to be little or not at all enlarged and smaller than the clinical examination would lead one to expect. The next feature to be noted is that the organ is overacting; pulsation is much increased. The extension of the beat is seen to be increased and is greater than that seen in a normal heart after exercise. The pulmonary arc may be fuller than normal and thus produce a straight left border to the heart shadow; pulsation in the pulmonary arc may be very much increased; the shadow of the superior vena cava may appear prominently.

Finally, on turning the patient into the first oblique position, the straight posterior border with no enlargement of the left auricle is in striking contrast to the shadow seen in mitral stenosis, from which condition masked hyperthyroidism has often to be distinguished.

As the condition occurs most often in older people, the typical "thyroid heart" is less commonly seen, and associated aortic atheroma or slighter grades of raised blood pressure may modify the picture.

EXAMINATION OF THE THYROID GLAND

When it is known that a cardiac abnormality exists, and when, from the cardiac symptoms or signs, attention is directed to the thyroid, examination of the gland will sometimes show the following. There may be no enlargement of the gland, and this may be so in a thin person in whom any enlargement, with the exception of a retrosternal one, would be easily visible. In distinction from this group, there exists a group of individuals with short fat necks in whom it is debatable whether the gland is increased in size or not. There may be no increase in the size of the gland, but the consistency appears to be altered, so that the gland is very firm on palpation. This hardening of the gland may be unilateral. The gland may contain one or more small hard nodules, which are so significant though they may not have been considered as the cause of the cardiac condition.

The size of the thyroid gland in 15 patients under observation was as follows:—

Group 1.—No visible enlargement	10
" 2.—Slight diffuse enlargement	1
" 3.—Moderate diffuse enlargement	1
" 4.—Visible nodule in the gland	3

In group 2 the case did not show any enlargement of the gland until ten years after the onset of the symptoms, although she was repeatedly examined with the possibility of thyrotoxicosis in mind.

ASSOCIATED SYMPTOMS AND SIGNS

Tremor is present in the majority. In this series all had a tremor of the fingers. A fine tremor only is of value as a sign of masked hyperthyroidism, as in the type of patient in which the condition is most commonly found, an elderly female, a coarse tremor can be of no diagnostic importance. Exophthalmos, on the other hand, is rarely present; in this series none of the patients showed it. In two cases a slightly "staring" expression was noted. The presence of von Graefe's sign without exophthalmos was seen.

The state of nutrition of the patient.—An interesting fact about the condition is the slow loss of weight which the patients experience. Most of them do lose weight at some period, but this loss is rarely noted by the patient herself, and I have never had the information volunteered in the history. Loss of weight in bed with appetite unimpaired may be of diagnostic value. Some of the patients studied are well above average weight for their height and some are obese. A few have not lost weight at all.

It will be seen from the foregoing description that patients actually suffering from thyrotoxic action on the heart may have no enlargement of the gland and no exophthalmos, may be fat and apathetic, and may lose weight very slowly or not at all.

Less obtrusive symptoms and signs.—It is, then, necessary to make a search for less obtrusive signs and symptoms, which if found to be present, point to the thyroid gland as the primary factor. Most of such signs or symptoms are elusive and are valueless singly, but if several are present together, in association with the cardiac signs, they may be of great value.

Flushing and moistness of the skin is often apparent. This flushing of the skin may give rise to a "salmon hue" mentioned by Levine and Walker[5] which, though difficult to describe, is often present and is of use as a diagnostic sign. Pigmentation of the skin, a light brownish patching occurring round the base of the neck and on the shoulders is described; it was seen in three patients. It is associated with a feeling of warmth, which is almost always present, and which is often mentioned by the patient herself; actual sweating attacks are not so commonly present. Unexplained attacks of diarrhœa are suggestive. Increased nervousness, and in particular a quickness of movement and a "fidgetiness," should not be overlooked. Premature greyness of the hair, lassitude, vomiting attacks, and sleeplessness all occur and should be noted. The general impression given by the patient is very important from the diagnostic standpoint.

THE BASAL METABOLIC RATE

The presence of a raised basal metabolic rate is of great value in confirming the diagnosis of masked hyperthyroidism; but since the toxicosis is often of very long duration and low grade, the high reading seen in frank exophthalmic goitre are not to be expected, and indeed were not seen, in this short series of patients. It must be borne in mind that in certain healthy individuals the rate is subnormal, and should such a patient develop a low grade of thyroid toxicity, metabolic rate estimation may not be a true indication of the amount of that toxicity. Again, it seems reasonable to suppose that the toxicity of the gland may vary from time to time and that one or more estimations of the rate may happen to be taken at times when the toxicity is low.

Morris[20 21] describes seven cases, all with a normal or subnormal metabolic rate, and all of which improved after thyroidectomy in the same way as did those with a raised rate. He states that operation either raises the rate when it is subnormal, or if it is normal leaves it unchanged.

Waters and Williams,[22] in recording a series of cases of menorrhagia due to hypothyroidism, mention three cases in which the rate was found to be normal, but in which there were other signs of thyroid deficiency which were relieved by the administration of gland extract. They emphasise that alterations in the metabolic rate should be accepted as only one of the signs, and not the essential criterion of a functional change in the gland.

Of the patients whom I have studied, the majority have shown a raised metabolic rate, but it may be mentioned that some had a normal or only very slightly elevated rate, though the symptoms appeared to be comparable with those in whom the rate was raised. At the present time, however, there is not sufficient evidence to form any definite opinion in regard to this problem, and further work in regard to it is in progress.

THE COURSE OF THE DISEASE

It seems possible to divide the cases into two groups in regard to the course taken by the disease.

(1) In the first group, the symptoms complained of—palpitation, sweats, and weakness—have been constantly present, but have not varied much in intensity, and apart from increasing weakness, the patient's state has been unaltered for long periods of time. A good example of this group is Case 2.

CASE 2.—Mrs. A., a woman aged 59, was admitted to hospital in August, 1931, complaining of palpitation and shortness of breath. The palpitation had been present constantly for two and a half years and during this period she had been in bed the greater part of the time, and had never been out of her house. The slight stimulus of getting out of bed accentuated the rate and this took several hours and often days before it settled down again. She had gradually lost weight and become weaker. Her skin was always moist, and she said she had become more nervous. There was no history of rheumatic or spirochætal infection.

Examination.—A thin woman, flushed moist skin, apathetic in appearance. Fine tremor of the fingers, no trace of exophthalmos or of enlargement of the thyroid, measurement around the base of the neck was 13 in., but the gland, though not at all enlarged, was unusually firm in consistency. Blood pressure 160/95. X ray showed a heart not enlarged, aortic arch slightly dense, and pulmonary arc slightly full. The apex-beat was "sudden" in the fifth space, there was a systolic murmur at the apex and base, but no other abnormality. When first seen the rate was 150, regular. She was given Lugol's iodine for 14 days and the rate fell to 100–110. The iodine was stopped and it rose again to 120. Eight days later iodine was again given, but no effect on the rate was noted. After a further 13 weeks in hospital the rate remained constant at 120, with occasional rises to 140–150 on exertion. Estimation of the basal metabolic rate at the end of this period was +37. Weight on admission was 7 st. 9 lb., 17 weeks later it was 7 st. 8 lb.

Here the thyroid was not enlarged at all, there was no exophthalmos, and only a fine tremor on which to suspect the thyroid as the causative factor. The condition was quite unaltered after 17 weeks rest in bed in hospital.

Exhibition of iodine at first had an effect on the rate, but later failed to do so. All other treatment had failed. The appearance of the patient was not in any way suggestive of hyperthyroidism and her only symptoms were cardiac. The condition, as mentioned above, had been present for two and a half years. On March 5th, 1932, the operation of *partial thyroidectomy was performed.* The patient recovered well from the operation, and ten days later the pulse had fallen to 80; it had never previously been at this level during the three years in which she had been under observation.

In September, 1932, five months after operation, she was perfectly well. Her tremor and nervousness had disappeared, the pulse had remained at an average level of 80, and she had gained 1 st. 8 lb. in weight. Her basal metabolic rate on Sept. 10th, 1932, had fallen to −8.

This case illustrates the failure of rest in bed to relieve the symptoms. This was true of all the patients seen. It also illustrates very well the "refractory" period which the patients show to iodine medication. The absence of cardiac enlargement after long-continued tachycardia is also notable.

(2) In the second group may be placed patients in whom the symptoms are recurrent and intermittent; thus frequent attacks of palpitation are complained of and these have been occurring over a period of months or years; into this group fall the majority of the cases observed. The intensity of the symptoms varies, and this is perhaps properly explained by variations in the toxicity of the gland. Thus the attacks of palpitation may occur at frequent intervals for a period of six or seven months, may then gradually become less frequent, cease altogether for a like period, and then start again.

The following case is a good example of this second group:—

CASE 13.—Mrs. B., a married woman aged 47, has attended the out-patient department of the National Heart Hospital since May, 1929. She complains of palpitation coming on in attacks which start quite suddenly, often in bed, and which awaken her from sleep. They last up to two hours and cease as suddenly as they start. She also has palpitation, slight dyspnœa on exertion, a dull præcordial ache, sweats, and attacks of diarrhœa which last for several days. She has become increasingly nervous. There is no history of acute rheumatism in early life, and the Wassermann reaction is negative. She says that the attacks of palpitation occur many times in one week on occasion, and at other times she may be free from the attacks for several weeks or months. In the intervals between series of attacks she feels well. These symptoms have all been present for about three years, and at their onset she had much worry over the illness of her husband. During the first years of attendance, the average pulse-rate was 100, and her weight varied between 8 st. 4 lb. and 8 st. 10 lb.

A tired-looking woman with flushed, moist skin and a faint brownish pigmentation over the right shoulder and the back of the neck, which she is quite certain was not present two years ago. Pulse-rate 104 regular, blood pressure 170/70, fine tremor of the fingers, no exophthalmos, no thyroid enlargement. Apex impulse typically sudden in the fifth space, internal to the mid-clavicular line, first mitral sound accentuated, but not "blurred," soft systolic murmur at all areas. Electrocardiograms showed simple tachycardia; unfortunately no attack of the severe palpitation which awakened her in the night was recorded. X ray examination showed an over-demonstrative heart, not enlarged, with no increase in size of the pulmonary arc; the aorta was slightly increased in width. The basal metabolic rate was +47. During a course of iodine for four weeks her symptoms improved. The pulse-rate became slower (80) and her weight rose from 8 st. 8½ lb. to 9 st. 3 lb. Coincident with this improvement in symptoms, however, the thyroid which had never been enlarged became definitely full. This improvement lasted for six weeks when the symptoms again became worse, the palpitation started again as also did the diarrhœa, her weight, however, remained constant. Her condition is to-day unchanged. She refuses any operative treatment.

DIFFERENTIAL DIAGNOSIS

Since the diagnosis of the condition may present great difficulty, the differential diagnosis is naturally difficult.

Mitral stenosis is a condition which may closely simulate masked hyperthyroidism. In both the first sound in the mitral area may be loud, and in thyrotoxicosis it may be blurred and closely suggestive of a presystolic murmur, and in both the pulmonary second sound may be accentuated. In both an apical systolic murmur is often to be heard. A history of acute rheumatism in childhood may be of help, but its absence does not exclude the former diagnosis. If fibrillation is present the differentiation of the two diseases becomes even more difficult, as they are the very two which often induce this complication.

The diagnosis can often be made upon: (1) The presence of associated signs of thyrotoxicosis, slight though they be. (2) The X ray appearance of the heart. The latter is often most useful. If the case is one of masked hyperthyroidism, the heart will commonly be smaller than the clinical examination would indicate it to be; the left border would appear straight, due to a filling out of the pulmonary arc, and the whole heart would be actively contracting and over-demonstrative. Lastly, and of most importance in differentiation is the size of the left auricle as seen in the first oblique position after the administration of barium. It is usually enlarged in mitral stenosis and never in thyrotoxicosis.

If a right axis deviation or a wide, split P wave is present, the electrocardiogram may be of value in negativing the diagnosis of thyrotoxicosis. I have not found it to be of use in confirming this diagnosis.

The following case illustrates the difficulty of diagnosis between the two conditions:—

CASE 3.—Mrs. C., a woman of 42, admitted to hospital in April, 1931, with a history of attacks of palpitation for about 16 years, a dull præcordial ache, and shortness of breath on exertion for four years. There was no history of rheumatic fever, but she suffered from severe growing pains and frequent tonsillitis as a child. The pulse was very irregular with a rate of 90–100, rising to 130–140 with the slightest exertion or excitement. She stated that she had not lost weight, and when under observation—March, 1931, to April, 1932—her weight varied by 5 lb. only. Physical signs were as follows:—

Apex impulse in the fifth space just external to the mid-clavicular line, no thrill, first sound at the apex very loud and "blurred," ? presystolic murmur, and there was a systolic murmur, soft in character, and not well propagated. At the pulmonary area the second sound was loud and short. Electrocardiogram showed a sinus rhythm with very frequent ventricular extrasystoles. Blood pressure 135/80. A provisional diagnosis of mitral stenosis was made, but X ray examination showed the heart to be not enlarged, over-demonstrative, with a prominent pulmonary arc which pulsated very markedly, and the left auricle was not enlarged as it would have been had the diagnosis been correct. On further questioning she stated that she suffered from profuse sweats on the slightest exertion and that her skin was always moist; she was flushed and had a fine tremor of the fingers; there was no exophthalmos. There was no noticeable fullness of the thyroid gland, but the right lateral lobe was denser in consistency than the rest of the gland. There was no improvement after seven weeks' rest in bed with digitalis therapy. The basal metabolic rate was then estimated and found to be +30, and she was greatly improved by a short course of iodine, the rate dropped to 80, and the extrasystoles became less frequent. Later she relapsed again and a second course of iodine was given without result. As she refused to undergo operation, she was then given five applications of X rays to the gland at fortnightly intervals. As the result of this procedure she is very greatly improved and her basal metabolic rate has fallen to +16.

Raised blood pressure is another factor which tends to complicate the diagnosis of masked hyperthyroidism. It is an established fact that thyrotoxicosis alone alters the blood pressure, usually raising the systolic pressure, leaving the diastolic unaltered or even slightly lowered, and thus increasing the pulse pressure. Many clinicians to-day regard this increase in the pulse pressure as one of the most important diagnostic features in thyrotoxicosis. In masked hyperthyroidism the significance of the blood pressure is more difficult to assess, for the condition is found to occur in older people, the average age of the patients studied being 52 years, in whom the pressure is normally higher, and with moderately raised pressures it is very difficult to say how much of this hypertension is secondary to the thyrotoxicosis and how much is primary. With a high systolic pressure the fact that the diastolic pressure is little raised and the pulse pressure great is certainly of paramount importance in coming to a decision at this point.

In this connexion the following two cases are of great interest:—

CASE 4.—Miss D., aged 57, was first seen complaining of palpitation, nervousness, headaches, and sweats. The symptoms had been present for one year, and in that time she had lost 12 lb. in weight. She stated that a swelling had been present in the neck since the age of 21. Examination showed a highly nervous patient with a moist flushed skin and a fine tremor of the fingers. There was a small, indefinite mass in the right lateral lobe of the thyroid gland which was not visible. The pulse-rate averaged 88 at rest and rose with slight exertion to 120. A soft systolic murmur was present at all areas. The mitral first sound was very loud and the aortic second sound a little accentuated. The blood pressure was 220/110. The electrocardiogram showed a well-marked left ventricular preponderance, and X ray a little enlargement of the left ventricle with a slightly wide aortic shadow.

She was admitted to hospital and treated as a case of hypertension, but after nine weeks in bed her symptoms were in no way altered; the blood pressure had fallen to 190/95. She was discharged and when seen again two months later her condition was unchanged. The pressure was then 220/105. After a further two months the operation of hemithyroidectomy was performed. Six weeks later she was much improved, her pulse-rate was 76, her palpitation, nervousness, and tremor had all gone; to-day, apart from occasional headaches, she is quite well. She has gained 1 st. in weight. Her blood pressure, however, is still 220/120.

TABLE II.—SHOWING THE IMPORTANT FEATURES OF FIFTEEN CASES

No. of case.	Sex.	Age.	Duration of symptoms in years.	Palpitation.	Alteration in rhythm.	Enlargement of thyroid gland.	Exophthalmos.	Nervousness.	Sweating.	Pigmentation.	Diarrhœa.	Tremor.	Loss of weight.	Pain in chest.	Blood pressure.	Enlargement of the heart.	Basal metabolic rate.	Cardiac failure.
1	F.	57	2	+	E.A.F.	Sl. +	No	Sl.	No	No	No	Sl.	Sl.	No	160/85	+	..	+
2	F.	59	2½	+	S.T. + Ex.S.	No	No	No	+	No	No	+	Sl.	No	160/85	No	+37	No
3	F.	42	4	+	S.T. + Ex.S.	No	No	No	+	No	No	+	No	+	135/80	No	+30 +16	No
4	F.	57	1	+	S.T.	No	? Sl.	+	+	No	No	+	+	No	220/110	+	..	No
5	F.	42	5	+	S.T. + Ex.S.	No	No	No	+	No	+	+	Sl.	No	240/130	+	+35 +13	No
6	F.	40	3	+	P.A.F.	No	No	No	+	+	No	+	Sl.	No	145/85	No	+21	No
7	F.	51	10	+	E.A.F.	Sl. +	No	No	+	No	No	+	+	No	140/85	+	Normal.	No
8	F.	44	11	+	P.V.T.	Sl. +	? Sl.	+	No	No	No	+	No	+	150/90	No	..	No
9	F.	56	1½	+	P.A.F.	No	No	No	+	+	No	+	+	+	145/90	No	+2	No
10	F.	64	3	+	S.T. + Ex.S.	Sl. +	No	+	+	No	No	+	No	+	160/90	+	+16	No
11	F.	58	3	+	S.T.	No	No	No	Sl.	No	+	+	+	No	170/95	No	+25	No
12	F.	59	2½	+	P.A.F.	No	No	+	+	No	No	+	+	+	190/100	No	+40	No
13	F.	47	3	+	S.T.	No	No	+	+	+	+	+	No	No	170/70	No	+7	No
14	F.	48	4	+	S.T.	No	No	+	+	No	No	+	+	No	155/70	+	+18	No
15	F.	57	3	+	P.A.F. Ex.S + S.T.	+	No	+	+	No	No	+	Sl.	No	170/90	+	..	No

S.T. = Simple tachycardia; Ex.S. = Extrasystoles; P.A.F. = Paroxysmal auricular fibrillation; E.A.F. = Established auricular fibrillation; P.V.T. = Paroxysmal ventricular tachycardia; Sl. = Slight.

CASE 5.—Mrs. E., a woman aged 42, who had previously attended the hospital as an out-patient for 18 months, was admitted in July, 1931, complaining of attacks of palpitation brought on by exertion or emotion, and lasting for about an hour. They were of very frequent occurrence, several such attacks in the 24 hours was common. She also complained of sweating attacks in bed at night, a cough in the winter time, and rapid fatigue. These symptoms had been present in varying degree for five years. Five years ago she had considerable worry in her home life. During the two and a half years prior to her admission she had been in another hospital twice on account of her palpitation. There was no previous history of rheumatism.

Examination showed a well-nourished woman, rather apathetic in appearance, with flushed, moist skin, no exophthalmos, fine tremor of the fingers, and no noticeable enlargement of the thyroid gland, measurement around the base of the neck being 13 in. Palpation of the neck revealed an increase in density of the right lateral lobe of the thyroid, and the patient herself volunteered the information that she felt at times that she must swallow to move something.

The heart was not clinically enlarged, though the apex was sudden and shock-like. Mitral area, first sound accentuated and blurred, very suggestive of a short presystolic murmur; soft systolic murmur. Pulmonary area, second sound accentuated; soft systolic murmur; the second sound in the aortic area was also accentuated. Blood pressure was 240/130. Eighteen months before, in January 1930, it was 150/100. The pulse-rate was 92 and varied between this and 120 during her stay of 11 weeks in hospital. Electrocardiograms showed the attacks of palpitation to be due to a simple tachycardia; a few extrasystoles were present. During her period of attendance as an out-patient she had not lost weight.

The diagnosis was for some time in doubt, the doubtful presystolic murmur and the accentuated pulmonary second sound suggested the possibility of mitral stenosis combined with hypertension, but X ray examination showed a heart not enlarged, with no increase in size of the left auricle, over-demonstrative with a full pulmonary arc. The basal metabolic rate was then found to be +36. She was later operated upon, in September, 1931, and the right lateral lobe of the gland removed. Embedded in its substance was an "adenoma" with a surrounding area of hyperplastic gland tissue. She made a very good recovery, and when last seen, three months after the operation, was very much improved and the palpitation was gone. The pulse-rate was 80. The metabolic rate had fallen to +13. The blood pressure was still 230/125.

The points of interest in a study of these two cases are: (1) That although both had a raised blood pressure, the symptoms which were relieved by operation were due to the associated thyrotoxicosis. (2) That the removal of the toxic thyroid did not influence the blood pressure. Further, in both the diastolic pressure was high. White,[26] in describing a series of cases of tachycardia due to hyperthyroidism without obvious goitre, mentions one case with a high blood pressure, in whom operation relieved the symptoms, but left the pressure unaltered.

The differential diagnosis between masked hyperthyroidism and *pulmonary tuberculosis* may occasionally give rise to difficulty. In both conditions sweats and loss of weight may occur and in both the patient may be languid, listless, and weary looking, but in the former condition cough is uncommon, as is also a raised temperature. Another point of distinction is the fact that in thyrotoxicosis the tachycardia persists after a long period of rest in bed.

Tucker[24] records a case in which a diagnosis of pulmonary tuberculosis was made and later changed to thyrotoxicosis, the basal metabolic rate being +35 and the patient responding well to iodine therapy.

The symptomatology of the condition may rather closely resemble that of *effort syndrome* so commonly seen in soldiers in the late war, and said by many to be still of frequent occurrence amongst civilian populations; but masked hyperthyroidism occurs notably in older patients and in a different type of individual to the latter condition. Most of the patients in this series were in the fourth. fifth, or sixth decades. Foster[25] points out the difficulty of diagnosis between *neurocirculatory asthenia* in young adults with an adolescent goitre and thyrotoxicosis, and says that the subsidence of the tachycardia in sleep is of use in differentiating the two conditions.

Hamburger and Lev[6] describe one case which closely simulated *diabetes mellitus with hypoglycæmic shock* following insulin medication, but which was relieved by iodine and thyroidectomy.

SUMMARY AND CONCLUSIONS

This paper is an account of the investigation of 15 patients, all of whom may be described as cases of hyperthyroidism masked as heart disease. All presented themselves complaining of cardiac symptoms; all were women; and the average age was 52 years. The average duration of symptoms was 3·8 years. The majority were apathetic in appearance, of good nutrition, and quite unlike the classical picture of Graves's disease. The diagnosis was indicated by the cardiac condition, and the factors which pointed to it were:—

(1) "Suddenness" of the apex-beat, even when the rate was slow, suggesting an increase in the size of the heart, which was not present in the majority. The apex impulse may be likened to that given by a normal heart after exercise.
(2) Presence of extrasystoles with a rapid rate.
(3) Presence of paroxysmal auricular fibrillation.
(4) The X ray appearance of the heart.
(5) Increase in the pulse pressure.

It was confirmed by the presence of less obtrusive associated symptoms and signs of which tremor and moistness of the skin are the most constant and were present in all of this series.

Thyroid enlargement was absent in ten patients in the series. in two a very slight fullness was noted only when the patient was made to swallow in the sitting posture, and in a further two a dense calcified nodule was present, though its significance had not been recognised.

Exophthalmos is rarely seen in this condition. but in two cases a slightly staring expression was noted. Pigmentation of the skin was seen in three cases. Some loss of weight occurred at some time in the majority but was never marked, and its occurrence was never volunteered by the patient. Its presence is not essential in the diagnosis.

Estimation of the basal metabolic rate is of great value if it is found to be raised as a means of confirming the diagnosis. The majority of patients seen had a raised rate, but several cases were studied with a normal or only slightly raised rate in whom the clinical picture and the response to treatment were comparable with patients in whom the rate was raised.

The association of pain in the chest of anginal nature and thyrotoxicosis is discussed. Five patients in whom this occurred are mentioned; in four the pain was felt at the onset of the attacks of palpitation, and as the latter were the result of thyroid toxicity, and appeared to precipitate the pain, such pain must be regarded as a symptom of this condition. Its frequency in this series can be explained on the grounds of the age-incidence—i.e.. an age at which atheroma of the coronary arteries is commonly present. The thyrotoxicosis must then be regarded as an ætiological factor of the pain only in as much as it leads to an increased demand for work on the part of the heart, in the same way as does exertion or emotion.

Two cases are described in which high blood pressure was present, but in whom the symptoms were due to an associated thyrotoxicosis. In both operation entirely relieved the symptoms, but left the pressure unchanged.

Of great value in diagnosis are the failure of rest and digitalisation to affect the condition. Iodine is often of value as a therapeutic test when it is first given. This effect. though often striking, was always transitory, and later the drug had no effect. The patient appears to become refractory to it.

A plea is made for the earlier recognition of these cases on the grounds of: (1) their comparative frequency; (2) their difficulty of diagnosis; and (3) their amenability to treatment.

The important features of the cases studied are set out in Table II.

My thanks are due to Dr. John Parkinson who proposed this investigation and who has given me much advice and help throughout; to the members of the honorary staff of the National Hospital for Diseases of the Heart for permission to study the patients under their care; and to Prof. E. C. Dodds and Dr. J. D. Robertson for their kindness in estimating the basal metabolic rates.

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REORGANISATION OF ST. CHAD'S HOSPITAL, BIRMINGHAM.—This hospital which, although it is owned by a company, limits its dividends to a maximum of 6 per cent., profits beyond that amount being used for improved equipment, has recently been reorganised. There is still a resident medical officer, with a full nursing staff, but there is no longer a medical staff. Under the new scheme patients are received from. and attended by, any doctor, whether consultant or general practitioner. There is a uniform charge of five guineas in a ward or in a single room, as desired; there is a maximum charge of one guinea for the use of the theatre. The doctors fix their own fees, which are paid to them direct. The hospital accommodates from 80 to 85 patients.

THE ANÆMIA OF CARCINOMA OF THE STOMACH

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The treatment of the anæmia of malignant disease has not been studied with the same intensity as that of other less fatal anæmic states. In the desire to treat the primary lesion little attention, as a rule, is directed to the condition of the blood. The anæmia is regarded as a secondary manifestation, often as part of the malignant cachexia, and is allowed to take its course untreated. There are, however, important exceptions to this general statement, and, in operable cases, the surgeon who is anxious to make his patient "fit for surgery" takes steps, usually by means of transfusions, to combat anæmia if it be at all severe.

In early malignant disease anæmia is occasionally the presenting symptom, especially of obscure growths of the alimentary tract. There are two situations in which the primary lesion is likely to be found—namely, the colon, especially the ascending portion, and the stomach. Anæmia associated with cancer of the stomach is the concern of the present report. All my three cases presented as examples of severe anæmia with very little suggestion of gastric disturbance other than loss of appetite. All three at first offered considerable difficulty in diagnosis, and all, unfortunately, were inoperable—one on account of peritoneal and later intrathoracic metastases, another because of advanced age, and the third because of local infiltration into the liver. Nevertheless in each case the anæmia responded in a remarkable way to treatment in spite of the existence of the growth, and the improvement continued until some serious complication supervened. The changes in the blood were followed by daily observations in Cases 1 and 2; less frequent observations were made in Case 3.

Figs. 1 and 2 illustrate the changes in the blood (red corpuscles, hæmoglobin, and reticulocytes) in Cases 1 and 2 respectively.

THE FIRST CASE

Male, aged 55. Family history negative. He had never had a day's illness until the onset of the present illness about eight weeks before admission to hospital. He first noticed that he was breathless even after the mildest exertion, and was told by his friends that he looked pale and ill. He noticed increasing weakness, and complained of tingling in the fingers and toes. He made no complaint of disturbance of digestion other than that for the last month or so he had not the energy to eat. He had not noticed much loss of weight. On examination he showed marked pallor, the teeth were septic, the tongue normal. The central nervous system and other systems showed no abnormality except that the abdomen was a little full and there was slight discomfort on deep pressure to the right of the mid-epigastric region.

The blood count at this time was as follows: red cells, 2,000,000; hæmoglobin, 37 per cent.; colour-index, 0·66; reticulocytes, 3·5 per cent.; and white cells, 6000; the relative proportions being normal. The film showed the anæmia to be of the microcytic type, many of the red cells were slightly distorted in size and shape, and a moderate degree of polychromasia was present. During the period of investigation the patient was given half an ounce of liver extract and half a pound of whole liver daily, and this was continued for 13 days.

The presence of free fluid in the peritoneum, the development of a palpable tumour in the epigastrium, and a positive occult blood test strongly suggested carcinoma of the stomach. There was achlorhydria in the gruel test-meal with altered blood in nearly every sample, and X rays showed the filling defect of carcinoma at the pyloric end of the stomach. The Wassermann and the van den Bergh reactions were negative. The gastric juice secreted on histamine stimulation contained no free acid and scarcely any pepsin—i.e., 2 Grosse units (normal = 30 to 50 units).

At the end of the period on liver there was no improvement in the blood, the number of the red cells was unaltered, the hæmoglobin had fallen to 34 per cent., and the reticulocytes were 3·5 per cent., never having risen above 4·8 per cent. After an interval of three days, at the end of which the occult blood test was still positive, a mixture containing grs. 90 of iron and ammonium citrate a day was given. On the fourth day the reticulocytes reached 14·7 per cent., and on the sixth day a maximum peak of 17 per cent. was attained. On the eighth day the red cells were 3,040,000, the hæmoglobin 42 per cent., the reticulocytes had fallen to 5·7 per cent. The blood continued to improve, and 18 days after the commencement of treatment by iron the red cells were over 4,000,000, the hæmoglobin 66 per cent. From the eighth day the stomach had been washed out every morning. On the twenty-third day a considerable quantity of blood was present in the stomach, and the blood in the stools increased. Apparently a moderate hæmorrhage caused a cessation in the improvement in the blood (Fig. 1). The patient now developed a large pleural effusion due to intrathoracic metastases, and active treatment of his anæmia was allowed to lapse.

In this case the anæmia associated with carcinoma of the stomach was not affected by liver treatment, but following the administration of iron by mouth a reticulocyte crisis and a notable improvement in the condition of the blood occurred.

THE SECOND CASE

Male, aged 73. Family history negative. He had always been a healthy man until about 18 months ago when his bowels, previously quite regular, became a little constipated. Purgatives were taken which induced an attack of diarrhœa, and later diarrhœa sometimes occurred spontaneously. From about a year ago the patient became subject to bouts of nausea at long intervals, when he was off his food for several days, and periods when he suffered from flatulence after whatever he managed to take. His diet was largely farinaceous, for he developed a slight distaste for meat. These digestive symptoms were only elicited on careful questioning, for the principal complaint of the patient was his extreme weakness, while his friends said that he had become very pale and a shadow of his former self. He had in fact only lost about 6 lb. in weight.

On examination he was very pale but not wasted; he had 3,400,000 red cells, 40 per cent. hæmoglobin, colour-index 0·58, white cells 9800, the proportion of polymorphs being very slightly raised. Gastric analysis revealed achlorhydria in the gruel test-meal, histamine after lavage produced small quantities of free acid and pepsin, but both were much below the normal response. There were traces of altered blood in the gruel fractional test and in the stomach washings, and occult blood was present in the stools. The van den Bergh test was negative, as also was the Wassermann reaction. Radiography of the stomach showed a large filling defect extending along the pyloric canal.

During the period of investigation the patient had been given liver extract in full doses. The anæmia was of microcytic type with a moderate degree of polychromasia and anisocytosis. It was therefore not expected that the patient would respond to liver, but he was allowed to continue with it for eight days. At the end of this time the number of red cells was unaltered and the hæmoglobin had fallen to 36 per cent., as shown in Fig. 2. After four days' interval, at the end of which the occult blood test in the stools was again found to be positive, he was given iron in the form of Blaud's pill grs. 20 t.d.s., and from the fifth day the stomach was washed out every morning. A reticulocyte crisis occurred with a peak on the ninth day. The subsequent uninterrupted improvement in the blood can best be seen in Fig. 2.

Operation being refused on account of age the patient returned home, where he continued to improve for about three weeks. Then symptoms of pyloric obstruction developed, practically all treatment was stopped, and the patient rapidly went downhill and died.

In this case the anæmia of carcinoma of the stomach failed to respond to liver, but following treatment with iron a reticulocyte crisis and a remarkable improvement in the anæmia occurred.

THE THIRD CASE

A married woman, aged 42. She had been anæmic and weak for many months after each of three pregnancies. She, however, dated her present illness in an indefinite way from the birth of her last child one year ago. During delivery she lost more blood than usual, and was kept in bed two months with a white leg. Mild symptoms of indigestion were noticed about this time, chiefly fullness and distension in the epigastrium. She remained excessively weak and pale and was in fact an invalid. Three weeks before admission she had a bilious attack, was nauseated, and vomited. She subsequently had three similar attacks. Her weight had been steady. The periods had not reappeared since her confinement.

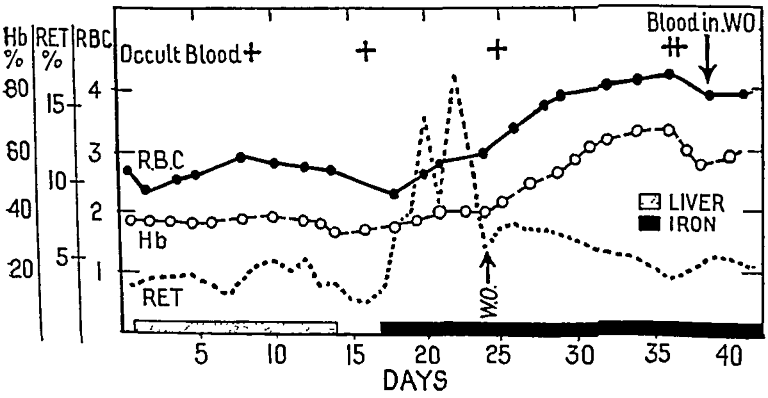
On examination she showed a waxy pallor of the skin with excessive pigmentation of the exposed parts and she was dyspnœic at rest. The heart, lungs, and central nervous system were normal. The tongue was smooth, the nails brittle, the spleen was palpable 1 inch below the ribs. The liver was enlarged downwards nearly 3 inches, a hard mass the size of an egg projecting from its lower edge to the right of the midline. The blood count showed the following changes: red cells, 2,720,000; hæmoglobin, 18 per cent.; colour-index, 0·33; white cells, 7200; the differential count being normal. The gruel fractional test showed achlorhydria; the juice secreted on histamine stimulation also contained no free acid, and the pepsin content was only equal to 3 Grosse units. The van den Bergh and the Wassermann reactions were negative.

The early investigations suggested a large gall-bladder with stones, adherent to the stomach and deforming it. Later the persistence of occult blood in the stools and the radiogram which showed a filling defect in the stomach led to a diagnosis of carcinoma.

During the period of investigation this patient was given Blaud's pill grs. 45 daily, and 1 drachm of acid. hydrochlor. dil. t.d.s. Within two weeks the hæmoglobin rose to 30 per cent., and on the twentieth day from the commencement of treatment by iron the red cells were 4,660,000, and the hæmoglobin was 45 per cent.; after another 14 days the latter had risen to 55 per cent., and the spleen could no longer be palpated.

This case with an anæmia of probably three years' duration, typical in its onset and progress of simple achlorhydric anæmia, responded in a dramatic way to large doses of iron in the presence of an inoperable carcinoma of the stomach.

FIG. 1



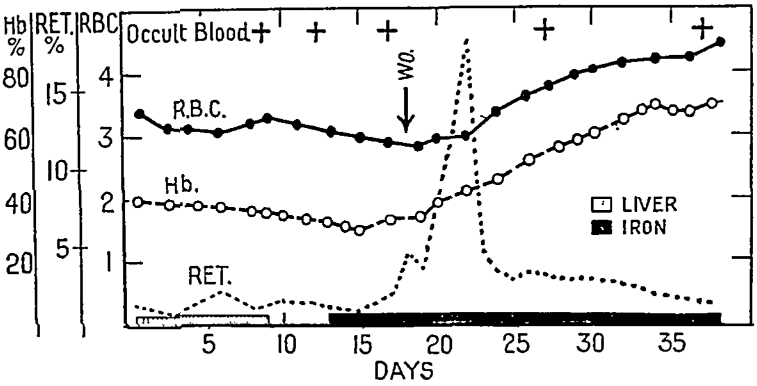
CASE 1.—Showing rapid effect produced by iron after a negative period on liver. WO = gastric washout.

DISCUSSION

These three patients illustrate how hypochromic microcytic anæmia associated with carcinoma ventriculi may respond in a remarkable way to large doses of iron. The severe gastric secretory defect is comparable with that of simple achlorhydric anæmia if contamination of the gastric juice with blood and exudate from the eroded growth surface be excluded.[1] Thus two cases were completely achlorhydric to both the gruel and the histamine tests, while the third showed only traces of free acid on histamine stimulation. All three had gross pepsin defect in the histamine secretion.

It is useful to inquire into the possible factors which cause early anæmia in certain cases of carcinoma of the stomach. One is obviously not concerned with the anæmia of the later cachexia, even assuming it has a different explanation, which is doubtful; or that due to gross hæmorrhage. In the type under discussion the following factors may, in varying degrees, play a part. (1) Repeated but quite small hæmorrhages from the surface of the growth, even in the earliest stages. The persistence of occult blood in the stools throughout the course of the disease is good evidence of this. (2) Defective nutrition from impairment of appetite, and reduced or modified intake of food defective in the necessary hæmatinic principles; in this connexion the common early symptom of distaste for meat is of special interest. (3) Defective gastric digestion due to disturbances in the gastric secretions. It is believed that changes in the gastric secretion associated with chronic gastritis antedate the development of carcinoma in nearly 75 per cent. of cases —i.e., those other than carcinoma *ex ulcere*.[2] Thus achlorhydria has been found years before the development of cancer of the stomach, and certainly achlorhydria and apepsia are present in the large majority of such cases once the lesion is established.

FIG. 2



CASE 2.—Showing negative result with liver and improvement following reticulocyte crisis induced by iron.

There are two well-defined blood diseases in which comparable gastric defect is present[3]; Addisonian pernicious anæmia, hyperchromic and megalocytic, and simple achlorhydric anæmia, hypochromic and microcytic.[1] One would expect to meet similar disturbances of the blood occasionally in carcinoma of the stomach. Thus when the gastric secretory defect entails the failure to form the intrinsic antianæmic factor (Castle) a megalocytic anæmia might appear which would respond for a time to the liver or stomach principle. Such cases have been reported by Simpson.[4] On the other hand, when chronic and persistent blood loss occurs in an individual on the border of iron starvation, the anæmia should be of the microcytic hypochromic type, and should respond for a time to large doses of iron. Anæmia of this type is an exact parallel to simple achlorhydric anæmia.[5] In such individuals other factors may play some part and, as in true simple achlorhydric anæmia, an initial poor reserve of iron may be due to a diet habitually poor in iron; but, be this as it may, iron starvation will certainly tend to develop in the presence of achlorhydria and pepsin defect (Mettier and Minot [6]).

Two practical points may be stressed from observations on these and other similar cases. The first relates to diagnosis: In any obscure case of anæmia of "secondary" microcytic hypochromic type it is *fallacious to believe that improvement in the blood* picture following the administration of iron is a point against the diagnosis of malignant disease. Providing there is no large hæmorrhage improvement may continue for a time in the face of secondary metastatic deposits.

The second point concerns the preparation of operable cases for gastrectomy. It is highly probable that the large majority of anæmic cases of carcinoma of the stomach can be improved by the administration of large doses of iron by mouth for a few weeks before operation. This improvement is enhanced by the simultaneous administration of hydrochloric acid and gastric lavage, which also facilitate the absorption of iron. To bring the blood condition up to what is desirable *for operation a transfusion may finally* be necessary, but the iron previously given has provided the patient with a reserve which will be available during convalescence, quite apart from the immediate contribution to the improvement in the anæmia.

In Case 3 there is a possibility that true uncomplicated simple achlorhydric anæmia was followed by the development of carcinoma of the stomach. The sex, the onset, and development of the anæmia, and the extremely dramatic response to iron, including the recession of the spleen favour this view. This would correspond to the cases recorded by Strandell,[7] Simpson [4] and Plummer,[8] of carcinoma developing in the stomachs of patients with Addisonian pernicious anæmia. According to Saltzman,[9] *if the association* is more than coincidence, and both the anæmia and neoplasm have a common basis of which the achlorhydria may be taken as an index, then such cases must occur with increasing frequency now that, without change in their gastric secretion, the lives of patients with pernicious anæmia are prolonged by treatment with liver.

SUMMARY

The changes in the gastric secretion associated with carcinoma of the stomach play an important part in the causation of the early anæmia sometimes met with in this disease.

The anæmia may be megalocytic and respond for a time to liver; this form is rare. It may be microcytic and temporarily respond to large doses of iron; this form is more common. Three such cases of microcytic anæmia, all of which responded to iron, are described in this paper.

I am indebted to Dr. A. F. Hurst for permission to investigate Cases 1 and 2, and to Dr. L. J. Witts for Case 3, and also for some details of the early history.

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DIABETES MELLITUS AND INSIPIDUS

ASSOCIATED IN ONE CASE

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AND
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CHEMICAL PATHOLOGIST TO THE HOSPITAL

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No case which satisfies such criteria has been reported in this country. In America, however, F. N. Allan and L. G. Rowntree[1] have recently described two cases of their own (the only two in the Mayo Clinic since 1912) and have reviewed the existing literature. From this it appears that satisfactory proof of such cases is extremely rare.

The case now described demonstrates the combination of these two diseases in one patient, and shows their control by insulin and pituitary extract.

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The patient was not quantitatively resistant to insulin and required at his worst *only* 40 units a day on a diet of 80 g. carbohydrate, 75 protein, and 150 fat—quite a moderate dose. The insulin, however, acted unusually slowly and the blood-sugar was lowest, not 4 to 6 hours after insulin but much later, and hypoglycæmic symptoms appeared on several occasions 8 to 10 hours after insulin. He gained weight satisfactorily on adequate diabetic treatment, but continued to drink copiously and to pass 160–200 oz. of urine a day. When 5 units (0·5 c.cm.) pituitary extract were given morning and evening with the insulin this distressing thirst and polyuria disappeared:—

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3	180	190			
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These studies confirm the coexistence of idiopathic diabetes insipidus with true diabetes mellitus.

At first the insulin and the pituitary extract were given by separate injections, but later the two were measured and mixed in the same syringe and this was found to be equally effective. No more insulin was required when pituitrin was added to the insulin. It is fortunate that two such serious diseases can be controlled as easily as one in the same patient—though perhaps not so cheaply!

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There is no evidence to suggest that the combination of these two diseases was other than fortuitous in this case. Nor did the patient's history give any clear idea of which disease occurred first, although he gave an indefinite history of a period of polyuria at the age of 8, 19 years previously.

We know that diabetes insipidus is due to a failure of pituitary function (hypofunction) and that a form of hyperpituitarism (acromegaly) may produce true diabetes mellitus. This patient, however, showed no stigmata suggesting previous acromegaly and therefore presents no evidence of any previous *pituitary lesion* which might account for the origin of the two diseases. In both of Allan and Rowntree's cases the diabetes insipidus preceded the appearance of the sugar by several years and the cause seemed to be a definitely dated pituitary lesion—a head injury in one and encephalitis in the other.

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1. A case is described in which diabetes mellitus and insipidus is present in the same patient. A combination seems fortuitous.

2. Treatment with insulin and pituitary extract controlled both diseases. No chemical or physiological antagonism was observed when the two hormones were mixed and injected together.

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Chemical analysis can, in view of these findings, yield no evidence of the biological effect of a dyed material. The correct use of the so-called "patch test" is therefore of importance. Bloch (1924–29) has used this method to demonstrate the idiosyncrasy of individuals to poison ivy, primula leaves, orthoform, &c. Sulzberger and Wise (1923) give a full description of the contact or patch test in dermatology, and, according to these authors, investigation by the test is applicable to such conditions as acute occupational dermatitis, dermatitis venenata, dermatitis medicamentosa, and drug eruptions of eczematous type (Ingram (1932)).

RECORDED CASES

While the diagnosis of fur dermatitis has become established, skin reactions due to dyes or to the wearing of dyed material other than furs have been almost unrecognised, and little information is available in the literature. Sezary, Lefevre, and Rivoire *(1930)* have described one case of artificial dermatitis of the neck after contact with a parti-coloured red and yellow *dyed silk handkerchief*; the inflammation was localised to the area of the skin in direct contact with the material. A yellow colouring matter, azofluvine, was extracted from the yellow coloured material, and azarine S from the red area.

anæmia.[5] In such individuals other factors may play some part and, as in true simple achlorhydric anæmia, an initial poor reserve of iron may be due to a diet habitually poor in iron; but, be this as it may, iron starvation will certainly tend to develop in the presence of achlorhydria and pepsin defect (Mettier and Minot [6]).

Two practical points may be stressed from observations on these and other similar cases. The first relates to diagnosis: In any obscure case of anæmia of "secondary" microcytic hypochromic type it is fallacious to believe that improvement in the blood picture following the administration of iron is a point against the diagnosis of malignant disease. Providing there is no large hæmorrhage improvement may continue for a time in the face of secondary metastatic deposits.

The second point concerns the preparation of operable cases for gastrectomy. It is highly probable that the large majority of anæmic cases of carcinoma of the stomach can be improved by the administration of large doses of iron by mouth for a few weeks before operation. This improvement is enhanced by the simultaneous administration of hydrochloric acid and gastri clavage, which also facilitate the absorption of iron. To bring the blood condition up to what is desirable for operation a transfusion may finally be necessary, but the iron previously given has provided the patient with a reserve which will be available during convalescence, quite apart from the immediate contribution to the improvement in the anæmia.

In Case 3 there is a possibility that true uncomplicated simple achlorhydric anæmia was followed by the development of carcinoma of the stomach. The sex, the onset, and development of the anæmia, and the extremely dramatic response to iron, including the recession of the spleen favour this view. This would correspond to the cases recorded by Strandell,[7] Simpson [4] and Plummer,[8] of carcinoma developing in the stomachs of patients with Addisonian pernicious anæmia. According to Saltzman,[9] if the association is more than coincidence, and both the anæmia and neoplasm have a common basis of which the achlorhydria may be taken as an index, then such cases must occur with increasing frequency now that, without change in their gastric secretion, the lives of patients with pernicious anæmia are prolonged by treatment with liver.

SUMMARY

The changes in the gastric secretion associated with carcinoma of the stomach play an important part in the causation of the early anæmia sometimes met with in this disease.

The anæmia may be megalocytic and respond for a time to liver; this form is rare. It may be microcytic and temporarily respond to large doses of iron; this form is more common. Three such cases of microcytic anæmia, all of which responded to iron, are described in this paper.

I am indebted to Dr. A. F. Hurst for permission to investigate Cases 1 and 2, and to Dr. L. J. Witts for Case 3, and also for some details of the early history.

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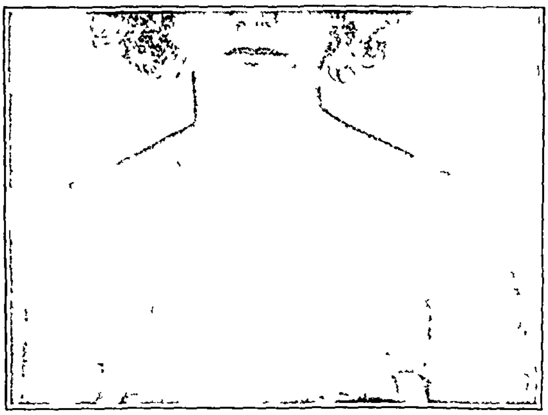
White (1897) described five cases of dermatitis following the wearing of unwashed black cotton shirts. Symptoms appeared in each case about ten days after the shirts were first worn; the lesion was sharply confined to those areas of the skin in contact with the shirt and consisted of an infiltrated erythema. The shirts were dyed with aniline black. Porosz (1924) reported two cases of localised dermatitis of the legs following the wearing of black socks. The dye concerned was again aniline black, and the lesion produced was similar to that described by White.

In our opinion, dermatitis due to common dyes is more frequent than is usually supposed. The reaction is not dependent on the presence of any abnormal substance, but results from the contact of the skin with the dye, which, though harmless to the majority of individuals, causes dermatitis in some subjects. The idiosyncratic nature of the reaction can be definitely established on investigation, and we have recently seen an individual who reacted to a dye previously considered harmless. In this paper this case is reported in full, since it serves as an excellent example of the class, and, further, we were able to examine the patient and carry out part of our investigations during the very acute stage of the illness.

HISTORY OF A CASE

On August 29th, 1931, Mrs. X., aged 35 years, consulted one of us for a dermatitis affecting the upper part of her trunk, which was so irritable that it caused loss of sleep and impaired her general health. She attributed her condition to the wearing of a blouse which had recently been sent to a garment dyer to be dyed black.

FIG. 1



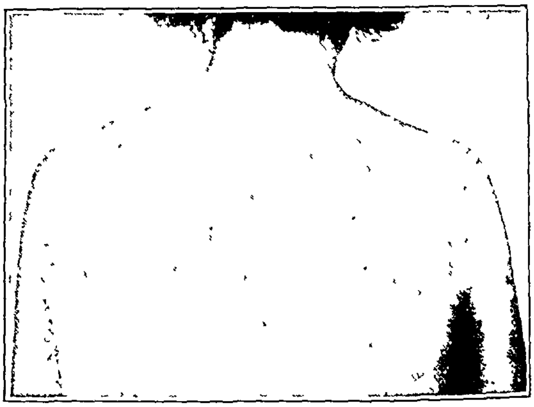
Photograph of eruption affecting upper chest and shoulders but not involving skin protected by shoulder-straps and petticoat.

The fabric of the blouse was a mixture of cotton and a regenerated cellulose artificial silk, and was originally pink in colour. On July 25th the blouse was sent to a firm of dyers and was returned after a few days dyed black as ordered. The garment was first worn about a week later, on August 2nd or 3rd.

The blouse was worn for about 14 days without serious inconvenience. After a few days' wear the skin of the folds of the axillæ and the flexor surfaces of the forearms was observed to be stained with dye; later, the skin became irritable and a rash appeared. About August 16th the patient stopped wearing the blouse, as she and her doctor suspected it of being the probable cause of the skin condition. Although the blouse was not worn again, the eruption increased in severity during the period August 16th to 29th, when she was first examined by one of us.

On examination the rash was found to have a striking distribution limited to the upper part of the trunk, being strictly confined to those areas of the upper thorax and shoulders left uncovered by the patient's undergarments. The rash was limited in front to about the level of the third rib, spreading over the shoulders and slightly on to the neck, avoiding only the skin protected by the shoulder-straps, and a V-shaped area corresponding to the front of the blouse. It extended down the back to about the same level as on the front of the chest. The hollows of the axillæ were clear and the eruption faded on the upper arms, but reappeared over the flexor aspects of the elbows. The lesion was an acute, œdematous, uniform, papular, eczematous eruption, and was intensely irritable. The unique distribution and character of the dermatitis made it obvious that it arose from some form of external irritant (Figs. 1 and 2).

FIG. 2



Photograph of eruption affecting upper back and shoulders but not involving skin protected by shoulder-straps and petticoat.

No ætiological factors other than the wearing of the dyed garment could be elicited from the patient's history. Apart from three small patches of chronic psoriasis of the scalp, from which the patient had suffered for 12 years, there was no sign or history of skin disease. No family history of asthma, urticaria, or eczema could be obtained.

The patient had taken a small quantity of thyroid daily for ten days during July, but had ceased this treatment for a month prior to consulting us. After the appearance of the skin eruption, antipyrin was prescribed to relieve the itching and to promote sleep. Local application of "Germolene," lead lotion, calamine lotion, "Resinol ointment" had all been tried prior to August 29th to relieve the skin affection.

The patient had not used hair dyes or depilatories, and no chemicals had been applied to the skin until after the onset of the rash. No new garments other than the dyed blouse had been worn which could account for the onset of the trouble. She gave no history of previous eruptions from dyed materials.

Clinical examination failed to reveal any constitutional or organic abnormalities and no disorders of function were detected. Special examinations carried out included urine analyses, blood-sugar and blood-urea estimations, blood-sugar curves following the ingestion of glucose, and the blood Wassermann reaction. The Wassermann reaction was negative, and the results of the other examinations were found to be well within normal limits.

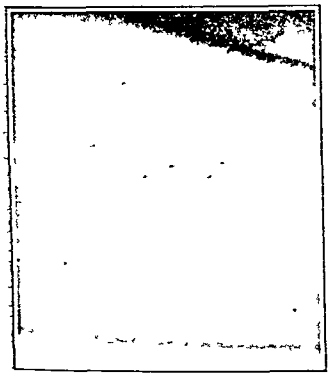
"PATCH TEST" INVESTIGATION

On Monday, August 31st, a "patch test" was made. A portion of the blouse, approximately 2 in. square, was placed on the flexor aspect of the right wrist, covered with lint, which was again covered with a square of gutta-percha tissue and strapped on the forearm. A piece of lint without a portion of the blouse was applied in a similar manner, as a control, to the flexor aspect of the left forearm. The applications were removed 40 hours later. The skin of the left forearm was normal, while that of the right forearm presented an area of acutely irritable, œdematous erythema, raised about one-eighth of an inch above the surface level of the skin, and localised to an area exactly corresponding to the position of the dyed material. The lint covering the piece of dyed material was observed to be well stained with dye. The patient stated that the right forearm became irritable some 24 hours after the application of the material. The area was still acutely inflamed five days later. Treatment was then applied and the condition subsided, though it was still possible to recognise the area on Sept. 12th.

Three control tests were made at the same time on healthy persons. Similar applications were made, as described above, to the flexor surfaces of the forearm of one female and two male adults. The results were negative after contact for 40 hours: the skin and the lint were observed in each case to be stained with dye.

A weak cold water extract obtained from the material was next applied to the skin of the patient's forearm. The extract was reapplied after 6 hours and again after 18 hours. The patient stated that the site became red and irritable two days later. The reaction disappeared in 24 to 48 hours.

FIG. 3



Patch test reaction. A portion of the blouse, disc-shaped, with centre cut out, was applied to left forearm for 24 hours, seven months after the original attack of dermatitis had subsided. The photograph shows the reaction.

The fastness of the dyed material to perspiration was then examined.

Artificial perspiration liquors were used which had been previously shown to have the same action as perspiration on dyed artificial silk. Vass and McSwiney (1930) demonstrated that perspiration undergoes considerable changes on standing; there is a marked increase in the ammonia nitrogen content with a disappearance of urea nitrogen, the reaction becoming definitely alkaline, due to bacteria normally associated with freshly shed perspiration. Acid and alkaline solutions were therefore used, of the following composition:—

Acid solution.—2·65 g. common salt and 0·75 g. urea per litre, brought to pH 5·6 with normal acetic acid.

Alkaline solution.—0·839 g. ammonium chloride, 1·732 g. common salt, and 0·424 c.cm. ammonia (spec. grav. 0·88) per litre, brought to pH 7·8 with normal acetic acid.

The material was backed between pieces of neutral undyed wool and white cotton, then thoroughly wetted in the acid or alkaline solution. The fabrics were passed through rollers to give 100 per cent. increase in dry weight. The damped materials were wrapped round a chemically cleaned glass tube and inserted into a second glass tube, so that equal pressure might be exerted over the whole area of the pattern. After incubation at 37° C. for two hours the materials were allowed to dry and then examined. The wool and cotton backings were found to be deeply stained, demonstrating that the dye bled readily from the fabric both in acid and alkaline perspiration liquors.

To establish whether the dyed material would act as an irritant to the normal person, the response of a large number of individuals to the fabric was investigated, using the patch test.

A portion of the material, approximately 2 in. by 1 in., was placed on the back or arm, covered with a square of gutta-percha, and strapped to the skin (B.1). Pieces of green (G), red (R), and two black materials (B.2 and B.3), were applied at the same time. These materials were stated to have provoked dermatitis in other individuals. The fabrics were allowed to remain in contact with the skin for 24 hours, when the strapping was removed and the skin examined. The response was stated to be positive if a rash was visible in the area covered by the fabric for a period of at least 12 hours. The investigation was extended to individuals suffering from various forms of skin and other diseases. The patch test was again employed as in the previous experiments, the fabric being placed in contact with an area of normal skin.

Results of Patch Tests with Dyed Fabrics, B.1, G, R, B.2, B.3

Normal subjects.	Sex.	Reaction.
30	Male.	Negative.
6	Female.	,,

The skin conditions included lupus vulgaris, lupus erythematosus, urticaria, seborrhœic and eczematous dermatitis.

Subjects of skin diseases.	Sex.	Reaction.
31	Female.	Negative.
38	Male.	,,

It will be seen from the Table that only negative results were obtained from normal subjects and from individuals suffering from skin and other diseases, with the exception of Mrs. X., who demonstrated a marked reaction. This subject was so sensitive that she reacted to a dilute watery extract of the dyed material. She failed to react to the other dyed fabrics, G, R, B.2, and B.3. The idiosyncrasy could therefore be said to be specific. A patch test performed seven months later (March 15th, 1932) against the dyed fabric B.1—using two further control materials—again provoked an acute positive reaction (Fig. 3). This reaction, however, did not appear until 48 hours after removal of the test. It is interesting to note that the idiosyncrasy appears to be lasting, and that the latent period of the reaction is increased.

Dr. F. M. Rowe, professor of colour chemistry in the University of Leeds, was consulted as to the treatment the material in question had received. At his suggestion a piece of the material was submitted to him for examination, and we wish to express our thanks to him for the following report:—

Examination of the black blouse.—The material is a thin fabric consisting of a cotton warp and a viscose artificial silk weft, such as is commonly used for making blouses or dresses. It was dyed solely with azo direct (substantive) dyes—i.e., the pink dye with which the blouse was dyed originally and the black dye used by the garment dyer both belonged to the class of azo direct dyes. It is not possible to name the actual black dye, but it is clearly of a type manufactured for many years by most firms of dye-makers throughout the world for use extensively for dyeing a variety of textile materials, as well as in garment dyeing. It is a dye which has always been regarded as suitable for use in garment dyeing, and it is clear that the blouse had been dyed in the usual and proper manner. A dye of this kind is only moderately fast, and by steeping a portion of the blouse in water or dilute ammonia, or by prolonged steeping in dilute acetic acid at body heat, coloured solutions were obtained.

Taking the properties of azo direct dyes into consideration, extracts were prepared which would have contained any undesirable organic compound, if such had been present in the blouse. The extracts were submitted to a range of definite and characteristic tests, which undoubtedly would have demonstrated the presence of any compounds, such as meta- or para-diamines, para-amino-phenols, &c. There was not the slightest indication of the presence of any of these organic compounds in the extracts, whereas control tests carried out simultaneously were strongly positive in every case.

It has been suggested that substances such as para-phenylene-diamine, para-aminophenol, are sometimes present in dyed materials (O'Donovan, 1930). McCafferty (1926) states that "many furs, stockings, and dress goods are dyed with para-phenylene-diamine." In Prof. Rowe's opinion, this statement is true as far as dyed furs are concerned, although even in this case the original para-phenylene-diamine or para-aminophenol used in dyeing should not be present in the finished fur if the subsequent washing has been efficient. It is not true of ordinary textile materials consisting of artificial silks, cotton, natural silk, wool, &c., as they are never dyed by using compounds of the type quoted.

There apparently exists a belief that dermatitis arising from the wearing of a dyed material is caused by some compound such as para-phenylene-diamine, with which the dyes employed are contaminated. In our opinion, this is not true, and we have therefore reported this case in some detail, as we have recently been in touch with cases of dermatitis due to the wearing of materials dyed with normal types of textile dyes. We believe this condition to be more common than the lack of information would suggest.

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PROGRESSIVE POST-OPERATIVE GANGRENE OF THE SKIN

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THIS interesting and apparently rare condition has received little or no attention in the British text-books and surgical literature, although several cases appear from American sources.

In the reported cases it has almost always occurred within a week or two of operation with drainage for acute appendicitis. The process generally starts in part of the wound, or in a stitch hole, as an indurated red area, tender and intensely painful, which advances with temporary remissions and exacerbations. The fully developed gangrenous process appears as a central black leathery slough surrounded by an indurated, red, inflammatory zone, and underlying this is a yellowish, infiltrated area where pus formation is at a minimum. The deeper structures are not affected, the skin and subcutaneous tissue alone being involved. A moderate rise in temperature—to 102° F. —accompanies the gangrene, although the patient does not seem to suffer so much from a severe toxæmia as from continued exhaustion and lack of sleep due to the severe pain.

In most of the recorded cases the accompanying organisms appear to be a combination of non-hæmolytic streptococci and staphylococci. In none of the cases, however, does there appear to be any underlying disease, such as syphilis or diabetes, as a causative agent.

The only treatment of any avail is excision of the entire inflamed and necrotic area, well clear of the area of infiltration, with the diathermy cautery. No other local measure has any influence on the process, which proceeds in an ever-enlarging area till its advance is checked by the above means.

CASE REPORT

A male, aged 62, was seen by me on August 15th, 1931. He gave a history of pain in the right lower abdomen for the past week which had not been severe until August 14th; he had not vomited. Examination revealed a mass about the size of a golf-ball in the right iliac fossa; there was marked tenderness. The diagnosis of acute appendicitis with abscess was made, and operation was carried out under general anæsthesia.

A rectus slide incision was made and a localised mass was found. This was packed off with gauze and an opening made into it. The appendix was found in the mass, swollen, perforated, and gangrenous, with an abscess containing two or three ounces of foul-smelling pus surrounding it. The pus was mopped up and the appendix removed, and the abdomen was closed with a rubber tube drain to the abscess site.

A small amount of pus was discharged from the tube track, and as this rapidly decreased the tube was removed on the sixth day. The remainder of the wound healed without any appreciable amount of suppuration, and for the first ten days following the operation the patient made good progress.

On the tenth day a small red patch of inflammation made its appearance in the upper part of the abdominal incision—i.e., distal to the site of the drainage-tube. This patch at first had all the appearances of an abscess in the abdominal wall and, except for the extreme pain which it occasioned, seemed to be of no great moment.

The area of inflammation continued to spread, and by Sept. 16th was about three inches in diameter with a central black slough and a surrounding red inflammatory zone. On this date the black necrotic area was excised with a scalpel under nitrous oxide anæsthesia, and eusol dressings were applied. There was a brief temporary improvement in the local and general condition of the patient, and the pain was distinctly easier. Soon, however, the inflammatory process continued to advance and, after a short trial of more energetic local treatment—viz., the application of a paste of dried magnesium sulphate and glycerin, combined with the application of artificial sunlight and continuous heat from an electric pad to the wound—further operative treatment was decided upon. Incisions, again under nitrous oxide anæsthesia, were made undercutting the gangrenous flaps and extending into healthy tissue, and a similar local treatment was used. Again there was a temporary improvement. So far, ever since the appearance of the gangrene, the patient's temperature had varied from normal to 102° F., and his general condition, in spite of the severe pain, remained satisfactory.

Despite all treatment, local and general, the gangrenous process continued to advance. In addition to the treatments already mentioned the following were tried without success.

Ichthyol 30 per cent. and iodine solution was used as a local application together with large doses of *potassium iodide* internally, owing to a resemblance between the appearance of the wound and a blastomycosis infection of the skin. *Diphtheria antitoxin* in large doses was given later, as occasionally a true diphtheritic inflammation has been observed in abdominal wounds following operation, and somewhat resembling the process in question. This serum seemed to produce a definite improvement which was, however, short-lived. Other remedies used without avail were *manganese butyrate* and *Edwenil* intramuscularly, and *staphylococcal antivirus* locally.

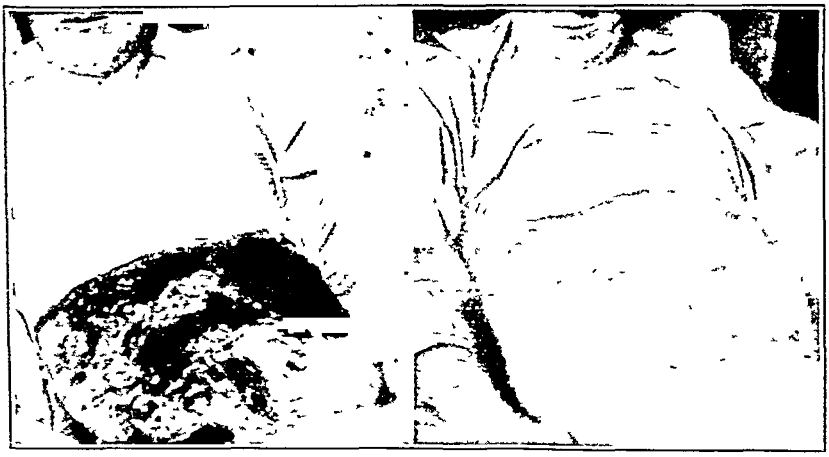
In about two months from the date of the operation the wound extended superiorly to within 2 inches of the costal margin, inferiorly to within an inch or two of Poupart's ligament, to the right to the anterior axillary line, and to the left above the level of the operation wound to the mammary line on this side. It was noticed that the gangrene did not extend into or across the operation scar, and so the area directly to the left of this was healthy.

The bacteriological report (Oct. 20th) showed that on culture the predominant organism was a streptococcus. There were also a number of colonies of hæmoglobinophil Gram-negative bacilli which were influenza bacilli, and a few colonies of staphylococci.

By this time the condition appeared so hopeless that treatment to be of any avail had obviously to be of a heroic nature. The fact that the gangrenous process stopped at the line of the abdominal scar suggested that it would be rational to cut a trench well clear of the inflammatory area through the skin into the subcutaneous tissue so that when the inflammation reached to this level a barrier of scar tissue would have formed and so arrest further progress.

Accordingly on Oct. 22nd a trench was cut and a few sloughs were excised with the diathermy cautery. As the gangrene advanced the process was arrested at this line, transgressing it only on the left side and slightly in one small area to the right, and accordingly the diathermy was again used in a similar manner on Nov. 10th. This effectually stopped any further spread, and finally on Nov. 21st, again with a general anæsthetic, the partially separated sloughs were excised so as to hasten the appearance of repair tissue. After this the wound appeared as a clean area upon which skin might be expected to grow from the wound margins. It is interesting to note that an area of skin to the right side, around which we cut the trench, failed to slough and so helped in the repair of the very large wound.

At first eusol was used to dress the wound, and later the whole area was covered with broad strips of elastic plaster bandage which were renewed about every ten days, the discharge from the surface easily permeating the bandage and being washed off with cold water and soap. Up to a point this proved a very satisfactory dressing, and the wound showed rapid healing, but for the final stages of repair a boric acid ointment dressing seemed to be the better application.



The left-hand photograph shows the wound after the second diathermy operation but before the excision of the sloughs; the one on the right shows it as it finally healed.

Two important complications occurred during the stage of healing. Firstly a pneumonia of the right lung developed: this was probably of embolic origin, the patient early expectorating blood. This pneumonia gave rise to a great deal of anxiety, the patient being delirious for about ten days and his general condition far from good. About a fortnight or so after this had cleared up satisfactorily the patient commenced a well-marked "white leg" which necessitated a further six weeks' rest in bed, but which settled satisfactorily.

It had been our intention to skin-graft the large wound after the final diathermy on Nov. 21st, but this operation was delayed by the complications, and as time went on the skin advanced in a most satisfactory manner from the edges of the wound and from islets of epithelium in the base which must have escaped the gangrenous process.

OTHER RECORDS

The following is a brief summary of similar cases of which I have found records.

Cullen[1] reports a case occurring after an appendicectomy with drainage. The gangrenous process was eradicated only after the actively growing edge of the ulcer was excised with the cautery. The organism in his case was a *Streptococcus brevis*.

Christopher's[2] case followed a rib resection for empyema, and the organisms found were a Gram-positive coccus and a Gram-negative bacillus.

In Brewer and Meleny's[3] case, following operation for acute perforated appendix, a streptococcus and a staphylococcus were isolated from the ulcer and these, when injected beneath the skin of animals, produced a gangrenous slough. These authors suggest as an ætiological factor a symbiosis of these organisms, as either separately failed to produce any ulceration.

Shipley[4] has reported a progressive gangrenous ulceration of the abdominal wall following the drainage of an appendix abscess, and in this case a non-hæmolytic streptococcus was isolated. In a similar case reported by Mayeda[5] an organism resembling the diphtheria bacillus was found.

In Cole and Heideman's[6] case a progressive ulcer of the abdominal wall started in a stitch hole 18 days after an operation with drainage for appendicitis. The main interest of this case is the fact that an amœbic organism was found in the pus and edge of the ulcer and, owing to the similarity with the other reported cases, they suggest an amœba rather than a bacterium as the cause of this condition. It is to be noted that their patient had not suffered from dysentery and that, although emetine led to some improvement, the condition only responded satisfactorily to cautery excision.

Freeman[7] gives an account of this interesting complication 12 days after an operation for gall-stones, the origin being from a stitch hole. The necrotic area in this case was never excised, as a nephritis developed and caused the man's death in less than two months from the date of the operation. He states that the microbic cause could not be determined, there being a confusing multitude of micro-organisms. He quotes Tennant's case which developed the condition following operation for ventral hernia and in which the disease was arrested by the use of artificial and direct sunlight.

Smith[8] mentions a case of progressive ulceration of the abdominal wall following appendicectomy, but in this case the Klebs-Löffler bacillus was isolated and the process yielded in the ordinary way to large doses of antitoxin. This is obviously quite a different form of ulceration from the one in question, and is only mentioned as in our case large doses of antitoxin were empirically tried with apparently some temporary success, although no diphtheria bacilli were found.

Baker and Terry[9] give an account of a case where the gangrene followed nine days after operation with drainage for acute appendicitis, and the process was finally arrested only after excision with the electro-cautery.

SUMMARY

A type of wound infection is described which leads to progressive gangrenous ulceration of the skin. The process is most common after operation with drainage for appendicitis and starts as a rule between one and two weeks after the operation, either in a stitch hole or the wound. The affected skin is first red, then finally gangrenous, and the area is intensely painful and tender. The organism most commonly found is a streptococcus, but in at least three of the above cases there has been found in addition a staphylococcus, lending support to the theory of Brewer and Meleny that the ætiology of the condition may be a symbiosis of these two organisms. The only effective treatment is excision of the area by the cautery or diathermy knife.

I am much indebted to Mr. Wilson Hey and Dr. William Dyson for their valuable suggestions regarding the final treatment adopted; to Dr. G. E. Loveday for the bacteriological examination; and to Dr. C. A. Travers for his constant help and coöperation.

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Clinical and Laboratory Notes

PATENT DUCTUS ARTERIOSUS
WITH INFECTIVE ENDOCARDITIS

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The association of infective endocarditis with congenital heart disease and with patency of the ductus arteriosus has been emphasised by Hamilton and Abbott,[1] Bedford and Boldero,[2] Horder.[3] Libman,[4] Maud Abbott,[5] and others. The following is a brief account of a case in which a patent ductus arteriosus was complicated by an infective endocarditis.

A schoolboy, aged 12, was first seen in 1929 with reference to his heart. When he had measles at the age of 8 he had an accompanying severe bronchitis with cyanosis. Examination of his chest at that time led to the discovery of a hitherto unsuspected cardiac lesion. He had never been a robust child, and was so susceptible to respiratory infections that his attendance at school had only been fitful.

On examination he was found to be undersized for his age, but mentally up to standard. There was no evidence of any external physical defect. Cyanosis and clubbing of the fingers were absent. The pulse was regular and the temperature normal. The tonsils were large and ragged. Pulsation was visible in the second and third left interspaces close to the sternum. The apex-beat was in the fifth space 3¼ inches from the mid-sternal line. A systolic thrill was best felt in the second left intercostal space. Gerhardt's ribbon dullness was not detected. On auscultation a bruit of the continuous or machinery type was present and was best heard close to the sternum in the second left interspace. The pulmonary second sound was reduplicated. The spleen could not be felt. Pulsation was present in the abdominal aorta and femoral vessels. Radiological examination showed that the heart was enlarged to the right and left. There was a prominent bulge on the left middle arc of the cardiac silhouette, which vigorously pulsated. A diagnosis of patent ductus arteriosus was made.

Final illness.—In June, 1930, six months after the previous examination, he was admitted to hospital on account of a rapidly developing anæmia, with weakness and pyrexia. The child was in a septicæmic state with occasional rigors, sweats, and an afternoon temperature of 102–103° F. He was extremely pale. There was no clubbing of the fingers. The physical signs were essentially the same as at the last examination, in that a machinery murmur was still present in the second left interspace. *In addition a diastolic bruit* was heard down the left margin of the sternum and at the apex. Liver and spleen were both palpable, the latter extending two fingers' breadth below the costal margin. There was dullness at both bases, with diminished breath sounds on the right and absent breath sounds on the left. Urine contained no blood or casts, but albumin was present. A blood count showed 2,300,000 red cells and 12,100 white cells. A blood culture gave a growth of the *Streptococcus viridans*. A diagnosis was made of a patent ductus arteriosus [illegible] The patient died the [illegible] both pleural cavities [illegible] m. The lungs were indurated and œdematous. The heart was enlarged, the left ventricle being proportionately more so than the right. The aorta was slightly larger in calibre than the pulmonary artery. A patent ductus arteriosus was present, and of sufficient size to admit a steel knitting needle. At its pulmonary orifice and extending along its lumen were soft vegetations, and these extended in addition a short distance down the pulmonary artery towards the pulmonary valve. A further small mass of vegetations were present on the wall of the pulmonary artery a little above the pulmonary valve. The pulmonary cusps were normal and devoid of vegetations. At the aortic orifice of the ductus there were no vegetations. Masses of soft friable vegetations were present on the aortic cusps. The remaining valves of the heart were apparently healthy. There was no other cardiovascular abnormality. The spleen was considerably more enlarged than clinical examination had revealed.

Libman considered that a patent ductus arteriosus was *the most important congenital defect* related to an infective endocarditis, and Bedford and Boldero found that infective endocarditis affecting the patent ductus arteriosus occurred more frequently than in any other congenital lesion in 36 cases reviewed by them. This case is interesting in that whilst the wall of the pulmonary artery and the pulmonary orifice of the ductus were involved, the pulmonary cusps were intact and healthy. From published records it appears that only rarely are the pulmonary cusps involved in the infective process. The aortic valves in this case bore masses of vegetations but the wall of the aorta was free of any lesion. Horder describes a similar case in which the pulmonary artery was involved together with the aortic valves, the pulmonary valve being exempt from any lesion. Although in the above case it seems probable that infection occurred first of all at the pulmonary end of the ductus and spread down the artery wall, it is difficult to explain the involvement of the aortic valves except on the assumption of embolic spread of infection to the aortic cusps.

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PATENT DUCTUS ARTERIOSUS
WITH A SUPERIMPOSED SUBACUTE BACTERIAL ENDOCARDITIS

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A sufficient number of cases of patent ductus arteriosus complicated by a superimposed infective endocarditis have been published to show that patients with this congenital defect, like all those with congenital heart disease, are in constant danger of being overtaken by this catastrophe (Horder,[1] Hamilton and Abbott,[2] and Boldero and Bedford[3]). However, the clinical features which at first led to a mistaken diagnosis of pulmonary tuberculosis make the following case worthy of record.

A woman, aged 35, was admitted to hospital with a history of "influenza" seven months ago, since when she had suffered from vague ill-health. She complained of persistent cough, pain in the back of the chest, dyspnœa on exertion, and general malaise. Nothing significant in the family history and no previous illnesses of note.

On examination the heart was found [illegible] enlarged to the left, and there was a strip of [illegible] border of the sternum in the second [illegible] At the pulmonary area there was a loud continuous humming-top murmur and an accentuation of the second sound. A pleural rub was heard at the left base posteriorly. There was a trace of albumin in the urine. The temperature was irregular, at times reaching 101° F., and there were frequent profuse sweats. The blood count showed a leucopenia with a mild secondary anæmia. Sputum examination revealed no tubercle bacilli.

A diagnosis of patent ductus arteriosus with complicating pulmonary tuberculosis was made, and the patient transferred to a sanatorium. Three months later she developed hæmaturia and was readmitted to hospital. The physical signs found were much the same as on the previous admission. Signs in the lungs varied, patches of harsh breath sounds with râles, and pleural friction being heard in parts of the chest from time to time. During the next seven months the fingers became clubbed, there was almost constant hæmaturia and repeated small hæmoptyses, the diastolic part of the humming-top murmur disappeared, and an aortic regurgitant murmur was heard down the left sternal border. The temperature ran a very irregular course, but was never normal for more than three consecutive days. Blood culture showed a growth of *Streptococcus viridans* on two occasions. The patient gradually developed the café-au-lait pigmentation of subacute bacterial endocarditis, and finally died of renal incompetence about eighteen months after the first onset of symptoms. Towards the end the spleen became palpable.

Post-mortem examination revealed a patent ductus arteriosus occluded by vegetations at its opening into the pulmonary artery. The pulmonary and tricuspid valves were normal. There was a large mass of vegetations on the aortic valve extending down to the aortic cusp of the mitral valve. There were pleural adhesions over both lungs, and multiple infarcts in both lungs, the kidneys, and the spleen. Culture of the heart's blood and splenic puncture showed a streptococcus similar to that recovered during life.

The main interest in this case, apart from the association of a congenital cardiac malformation with subacute bacterial endocarditis, is the fact that the repeated small pulmonary infarctions were responsible for the mistaken diagnosis of pulmonary tuberculosis until embolic phenomena in the kidneys revealed the true nature of the condition.

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A CASE OF ANÆMIA DURING PREGNANCY

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A WOMAN, aged 21, came into the Sussex Maternity and Women's Hospital under Dr. J. Shardlow on April 18th, 1932, complaining of swelling of the feet and face, and increasing pallor.

History of illness.—There was no history of anæmia in any relative. The patient had been a perfectly healthy subject, except for attacks, during several preceding years, of slight substernal pain relieved by ordinary measures. The indigestion had been worse for the last three to four months. There was no history of vomiting, diarrhœa, or sore tongue, and none of anæmia. The diet had, so far as was ascertained, been adequate in all essentials, and was in fact, for the class of patient, unusually full. The date of the last menstrual period was not known with accuracy by the patient, but it was believed to have been eight months previously. For six months she had suffered from swelling of the feet, without headache or albuminuria, while for some months she had complained of giddiness.

During the previous 12 days the face had become puffy, and the patient had been confined to bed at home for ten days on a fluid diet with low protein intake. The œdema had to some extent improved on this treatment, but pallor became suddenly noticeable seven days before admission, coincidently with the decrease in œdema, and grew rapidly worse.

Examination.—The patient was a short, well-nourished girl. The face was puffy, and there was considerable œdema of legs and vulva. The feature which at once presented itself to the eye of the examiner was the intense pallor of the face and mucous membranes. Some slight icterus was also noticeable. The tongue was not furred and showed no glossitis. There was no sign of stomatitis. Of lymph glands there was none available to palpation. Examination of the abdomen disclosed a pregnancy of eight months' duration, with the head not as yet engaged. The liver was not felt, but the tip of the spleen could be palpated two fingers' breadth below the costal margin. Over the præcordium there was a systolic murmur and thrill. Blood pressure was 148/74.

Investigations.—0·5 part of albumin per 1000 was present in the urine, together with a fair number of pus cells and a few red blood corpuscles. Urobilin was found to be abundant. Of blood tests, the van den Bergh gave a direct negative reaction, while on indirect test 0·5 unit was discovered (April 20th). The Wassermann reaction was negative. Blood examination on April 19th gave the following result:—

Red cells.. ..	1,095,000	Polymorphs ..	79%
White cells ..	11,400	Lymphocytes ..	16%
Hæmoglobin ..	29%	Monocytes ..	3%
Colour-index ..	1·3	Eosinophils ..	1%
		Myelocytes ..	1%

The red cells showed much anisocytosis, and poikilocytosis, extreme polychromasia, and punctate basophilia. Some nucleated red cells were present, all normoblasts.

Treatment.—On April 19th, the day after admission, the patient began to vomit and complained of epigastric pain, and she continued to vomit until the 25th, making it difficult to maintain any intake of liver extract. On the 21st small hæmorrhages were noticed over the sternum, and on the right forearm and left leg. On the same day treatment by oral administration of liver extract (Liveroid and B.D.H.) was instituted, and total daily amounts equal in value to ¼ lb. of raw liver were retained in spite of the vomiting. A diet as full as could be taken was allowed. Epistaxis occurred on the 22nd and again on the 23rd; 2 c.cm. of campolon liver extract was given intragluteally on the 25th owing to the vomiting excited after oral administration. The injections were continued daily.

Labour and puerperium.—Labour pains began on the 25th, but were very slight, becoming severe the following day. During the second stage air-hunger became intense. Forceps were therefore applied under ether, in analgesic dose only, and a male fœtus of seven and a half to eight months' development in a state of early maceration was removed. There was no sign of anæmia in the child, the mucous membrane being of a normally deep colour. Almost no blood loss attended the birth of the child or placenta, but afterwards the patient developed more œdema round the eyes, extreme orthopnœa, dizziness, and præcordial pain. The temperature rose the same evening, and continued in slight degree until discharge with nothing beyond the anæmia to account for it. On the 21st the liver and spleen were each palpable two fingers' breadth below the costal margin. Dyspnœa on the slightest effort remained for a few days longer, and the heart-rate became very rapid.

Further course of illness.—On April 30th iron in the form of Blaud's pill was given in small doses (grs. x b.i.d.), and as vomiting had ceased the patient was again placed on B.D.H. liver extract (1 capsule daily by mouth). On the morning of the 30th the patient had an attack of blueness with unconsciousness, and on recovery she complained of loss of power in the arms. During the afternoon she developed a maniacal attack, being apparently unconscious of the nature of her surroundings, and filling the ward with loud screams and cries. She became rational, however, before the following day.

The heart, when examined on May 2nd, was found to be showing reduplication of the first sound, with thrill, very loud murmurs, and a rapid rate. The liver edge was extremely tender, suggesting a failing myocardium. The condition caused anxiety for several days. By May 4th, however, the patient was beginning to eat well, though she occasionally vomited after food. She complained of spots before the eyes, and occasions when "everything went black."

After this date improvement gradually set in, and after May 22nd no more liver was given. She thereafter made an uninterrupted recovery, apart from one further attack of epistaxis. When the patient returned home on the 27th the liver was just palpable, and hardly tender, and the spleen could be felt two fingers' breadth below the costal margin.

Iron or liver treatment was not undertaken by the patient after discharge, but when she was seen on July 31st, 1932, there was little sign of anæmia, the colour of the mucous membrane and cheeks being excellent. Blood examination on Sept. 30th gave the following result:—

Red cells.. ..	4,490,000	Polymorphs ..	69%
White cells ..	5,220	Lymphocytes ..	23%
Hb.	84%	Monocytes ..	8%
C.I	0·9		

The red cells were normal in shape and size, and none with nuclei was seen.

I wish to express my thanks to Dr. Shardlow for permission to publish this case, and to Dr. H. M. Galt and Dr. L. R. Janes, of the Royal Sussex County Hospital, for many of the pathological investigations.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTIONS OF THERAPEUTICS AND MEDICINE

At a joint meeting of these sections on Jan. 10th, with Dr. H. Morley Fletcher in the chair, a discussion on the

Treatment of the Anæmias

was opened by Dr. L. J. Witts. In the treatment of microcytic hypochromic anæmias, he said, different chemical combinations of iron had been found to vary greatly in therapeutic activity. The evaluation of remedies was difficult in these anæmias; there was no short cut corresponding to the reticulocyte enumeration in pernicious anæmia. The reticulocyte crisis in a case of microcytic anæmia was prolonged, and the reticulocytes might remain at a level of 2 or 3 per cent. until the anæmia was approaching complete repair. The only way to judge the value of a remedy in these cases was to observe the result on the patient. The compounds of iron, in order of potency, were: ferrous salts, scale preparations, ferric salts, and organic compounds. Organic preparations were almost without effect; the ferrous salts appeared to be much the most potent, especially when achlorhydria was present. Iron and ammonium citrate could be given in doses of grs. xl. a day. If Blaud's pill was given the patient should be advised to swallow the pill crushed. He had endeavoured to determine the effective dose of Blaud's pill, working with series of cases of microcytic anæmia, and had concluded from observation of a series of 18 cases that the smallest dose which could be relied on to give uniformly successful results was grs. xlv. a day. No arsenic, copper, or other inorganic salts were given to these patients, and no liver; a few were given hydrochloric acid. He was convinced that there was no need to add any of these substances to the ordinary diet of an adult in order to make iron therapy effective. Whatever preparation of iron was used, occasional refractory cases would be found which required large doses, but 80 per cent. of microcytic anæmias responded to as little as grs. xv. of Blaud's pill a day. Now that a new preparation of iron for injection had been included in the B.P.C. there would be opportunities for testing its value. The therapeutic dose of iron and ammonium citrate by mouth was 800 mg., and in the case recorded by Hurst in which toxic symptoms arose the dose had been 2100 mg. The therapeutic dose of iron by injection was 16–32 mg., whereas the toxic dose was 48 mg.; the margin of safety was therefore narrow, and he had preferred to avoid the use of iron by injection for that reason. With anæmia occurring at the menopause menorrhagia might nullify the effects of medical treatment; in such cases induction of an artificial menopause produced good results, with disappearance of the anæmia and associated symptoms. In the treatment of pernicious anæmia the cost of remedies was often overlooked. English calf's liver cost 15*d*. a day, and imported calf's liver 8*d*. Dry liver extracts were unpalatable and expensive (36*d*. a day); fluid extracts cost, on an average, 20*d*. a day. Liver extract for intramuscular injection worked out at 10*d*. a day, and was therefore not an extravagance when used on emergency cases, and was much more effective in such cases than liver given by mouth. Desiccated stomach of British manufacture cost 6*d*. a day, though an Anglo-American preparation cost 48*d*. a day. The high claims made for desiccated stomach had been fully confirmed, and it was much the most effective as well as the cheapest treatment for pernicious anæmia at the present time.

RESPONSE IN ANÆMIAS OF DIFFERENT TYPES

Prof. L. S. P. Davidson classified anæmias as follows: (1) anæmias due to nutritional defects; (2) post-hæmorrhagic anæmias; (3) hæmolytic anæmias. It was a mistake, he thought, to treat pernicious anæmia with liver extract or hog's stomach extract alone, once the relapsed stage was past. During the period when the blood count was falling—usually about six months—iron from the hæmolysed blood was retained in the organs. In the recuperative stage, however, as he had been able to show from an autopsy on one of his patients who had been run over, there was no free iron in the organs. He thought, therefore, that patients needed whole liver during the recovery period. He had recently been able to show that fish livers contained a potent substance for the cure of pernicious anæmia; dramatic results had been obtained with extracts prepared from the livers of various fish including cod, haddock, whiting, and monk fish. Extracts made from these sources could be prepared at a much lower cost than animal liver extracts. He had tried the effects of vitamin B, in the form of Marmite, on cases of pernicious anæmia, and had had one or two marked successes with a dosage of ʒ i.-ii. daily, but many failures. Larger doses of the preparation were unpalatable, so that it was unlikely that it would take the place of liver extract. He had obtained excellent results in microcytic anæmia with solid ferrous chloride in daily dosage of grs. v.; this small dose was as effective as Blaud's pill in doses of grs. lx. daily. A preparation of solid ferrous chloride on the market, however, cost the patient 4*s*. a day as compared with 4*d*. a day for Blaud's pill.

EXHAUSTION OF THE BLOOD-FORMING TISSUES

Dr. H. Letheby Tidy thought that, in some cases, exhaustion of the blood-forming tissues might be responsible for the exaggeration of anæmia. He was not referring, he said, to aplastic anæmias. In the type of case he meant the life of the patient might be saved by a blood transfusion. Exhaustion of the hæmopoietic system might be responsible for the condition called "acute febrile anæmia." Cases of polycythæmia, when they developed anæmia, as they sometimes did, might also be examples of such exhaustion. Patients with primary purpura sometimes developed anæmia before any hæmorrhages had taken place; certain cases of pernicious anæmia failed to react to any treatment; and the pernicious anæmia of pregnancy developed without any relation to loss of blood. Some of these were cases in which there might well be acute exhaustion of the hæmopoietic system, and blood transfusion might start them on the way to recovery.

Prof. F. S. Langmead had obtained good results in the microcytic anæmias with Blaud's pill in doses of grs. cl. a day, given in gelatin capsules containing grs. xvii., three capsules thrice daily. He had wondered why the amount of iron which had to be given to be effective was so far in excess of the small amount the body actually needed. He had consulted Dr. R. B. Bourdillon who thought it was associated with the pH of the duodenal contents; where achlorhydria was present, the pH would naturally be unduly high. Achlorhydria was a common factor in those cases which benefited by iron therapy. Perhaps iron in ordinary doses might be equally effective in their treatment if given in association with hydrochloric acid or salts such as ammonium chloride or sodium dihydrogen phosphate, which would tend to lower the pH in the duodenum.

Dr. DOROTHY HARE described a case of microcytic anæmia in which injections of iron had been given for 19 days without benefit to the condition; the patient was then put on iron and ammonium citrate, with immediate and dramatic improvement. She concluded that in some cases the injection of iron was unsatisfactory, or the results were so long delayed that it was not worth while waiting for them.

Dr. JOHN WILKINSON agreed that hog's stomach extract was the best preparation for the treatment of pernicious anæmia. He and his colleagues had been investigating the active principle in hog's stomach and had obtained a good many fractions which appeared to be active. In critically ill cases parenteral liver therapy gave the quickest results. Unfortunately the preparations of liver for injection on the market were extremely variable in their action. Many hog's stomach preparations, too, even though made by reliable firms, were inactive; but once a firm had learned to prepare stomach extract properly the preparations they put out were uniform. This was not the case with preparations of liver for injection. He had tested the effects of copper and manganese in microcytic anæmia, individually and together, and with iron, and had reached the conclusion that better results were obtained with iron alone in most cases. He doubted whether sufficient acid could ever be given by mouth to alter the pH of the duodenum, or affect the absorption of iron.

Dr. SINCLAIR MILLER said that many elderly people with pernicious anæmia found a weekly or fortnightly injection preferable to taking liver or stomach extract daily by mouth; they maintained their hæmoglobin well on this method of treatment.

Dr. E. N. ALLOTT asked whether liver therapy possibly favoured the development of nervous symptoms in patients with pernicious anæmia, and described two cases in which there had been no nervous symptoms beyond slight tingling of the fingers, before liver treatment was begun; subsequently the patients had complained of marked numbness of the fingers which nothing seemed to relieve.

The PRESIDENT asked whether whale livers had been investigated in connexion with the treatment of pernicious anæmia.

REPLY

In replying Dr. WITTS said that if symptoms of subacute combined degeneration developed the dosage of liver or stomach extract must be increased until there was improvement. If the patient was suffering from a shortage of iron during the recuperative stage of pernicious anæmia he should be given iron by mouth, not liver. No one would go on eating liver twice a day for life, and most patients ate just enough to keep them alive, but not sufficient to prevent the development of subacute combined degeneration. This might account for the increased incidence of nervous symptoms. He had seen four patients die following blood transfusion in acute anæmic breakdown, and thought it dangerous treatment. Prof. DAVIDSON thought that there had been a decided increase in the incidence of subacute combined degeneration since the introduction of liver therapy. He had only been able to obtain very slight improvement in the nervous symptoms by enormous doses of liver extract.

PATHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND

A MEETING of this society was held at University College Hospital medical school on Jan. 6th and 7th, with Prof. A. E. BOYCOTT and Prof. C. C. OKELL in the chair.

T. SHENNAN and W. NELSON (Aberdeen) described a cheap and efficient mounting medium for museum specimens composed of liquid glucose, sodium acetate, and thymol.—G. R. CAMERON and C. L. OAKLEY (London) discussed the autolysis and destruction of liver tissue transferred to the omentum, and pointed out that the bile-ducts survived and sometimes proliferated.—R. D. PASSEY and A. LEESE (Leeds) found that kidney placed in the pleural cavity stimulated the growth of the lining epithelium of the superficial lung alveoli.—R. D. PASSEY and J. McD. HOLMES (Leeds) brought forward a number of statistics of the occurrence of carcinoma of the lung, and suggested that the apparent increase in recent years was really due to enlargement of the hospital populations and the activities of the tuberculosis dispensaries.—W. CRAMER (London) had worked out the details of the nephritis found in rats fed on a diet deficient in magnesium: it begins in the glomeruli, probably owing to loss of capillary tone, and leads ultimately to considerable fibrosis.—J. G. GREENFIELD (London) described two examples in young children of an undescribed form of cerebral sclerosis beginning with a degeneration of the interfascicular oligodendroglia.—M. J. STEWART (Leeds) showed some remarkable small arteries found in a fibrous pleura in which there was great overgrowth of the longitudinal muscle-fibres of the intima.—R. MUIR and J. F. HEGGIE (Glasgow) found no hæmoglobin in the bile after the intravenous injection of laked blood; it was, however, present in various toxic conditions produced by phosphorus, phenylhydrazine, saponin, hæmolytic serum, or aniline.—R. MUIR and A. C. AITKENHEAD (Glasgow) found that intraduct carcinoma of the breast is often obliterated by fibrosis which fills up the whole duct.—J. H. DIBLE (Liverpool) described an infant with a penis, a uterus, and a neuroblastoma of the adrenal.—W. M. CROFTON (Dublin) made some remarks on the biology of the cancer cell, and on sarcomatosis in the rat.

K. M. SMITH (Cambridge) gave an account of his X and Y plant viruses, their different properties, the symptoms and lesions they produce respectively and in combination, and their separation by a transmitting aphis.—W. W. C. TOPLEY (London) had repeatedly vaccinated mice with *Bact. ærtrycke*, and then tested their immunity by the inoculation of live cultures. Up to the sixth vaccination they became progressively more resistant, afterwards more susceptible again.—P. HARTLEY and P. BRUCE WHITE (London) described a simple practical method of drying antigens and antibodies in a vacuum with phosphorus pentoxide, by which excellent permanent preparations are obtained.—E. HINDLE and P. BRUCE WHITE (London) gave an account of the preparation of a soluble specific substance from cultures of leptospiras which seemed likely to be of considerable value in separating and identifying the different species and serological types.—K. W. Goadby (London) described the necrotic action of an acetone-soluble lipoid from staphylococcus.—J. Gordon (Leeds) discussed the analysis of the bactericidal action of normal serum.—D. McClean and W. T. J. Morgan (London) showed that the addition of testicular extract to the injection considerably promoted the absorption of antitoxin into the blood.—G. N. Boxhall and F. C. Happold (Leeds) presented some notes on the cultivation of leptomonas and leishmania.—Mary M. Barratt (London) described some curious types of diphtheroid bacilli obtained from the nasopharynx.—C. A. McGaughey (Manchester) demonstrated a number of variants which arose in cultures of Welch's bacillus.—S. L. Cummins (Cardiff) described an interesting imitation of the tubercle bacillus isolated from sputum.—C. E. Dukes (London) discussed the conditions favouring urinary infection after post-operative retention.

Among the exhibits were :—J. C. G. Ledingham (London): the growth phases of the organism of pleuro-pneumonia. R. J. V. Pulvertaft (London): bacterial fluorescence; radium burn of aorta; implantation dermoid in bone; carcinoma of ureter. A. Baker, E. Lepper, and D. Vaux (London): granulosal cell tumours and folliculoma of ovary. E. Lepper (London): macroscopic sections of breasts. C. Price-Jones (London): blood curves. J. A. Boycott (London): a Pijper apparatus for blood corpuscles. D. Vaux and G. Hadfield (London): tumours of parathyroid and pleura. J. M. Ross (London): false mycelium in spleen. G. P. Wright (London): angioma of heart. M. L. Rosenheim (London): periarteritis nodosa. C. C. Choyce (London): radium burn of œsophagus. T. S. Keith (London): extreme dilatation of left auricle: method of mapping the heart post mortem. J. W. S. Blacklock (Glasgow): dermoid cyst in spinal cord; lobulated spleen in infant. J. F. Heggie (Glasgow): hepato-lienography with thorotrast. R. P. Mathers and D. F. Cappell (Dundee): rhabdomyoma of soft palate. T. Taniguchi (Japan): preparations of the parasites of vaccinia and variola. J. S. Foulds (London): umbilical endometrioma; myeloma of skull. J. W. McNee (London): reticulo-endotheliosis of spleen. R. T. Grant (London): arterial angioma causing heart-block. W. N. Goldsmith (London): mycosis fungoides.

LIVERPOOL MEDICAL INSTITUTION

At a meeting of this institution on Dec. 15th, with Prof. R. E. Kelly, the President, in the chair, a discussion on the

Avoidable Wastage Resulting from Industrial Injuries

was opened by Dr. H. E. Moore, surgeon to the L.M.S. Railway. He produced figures showing long incapacity periods amongst men for whom all active treatment had ceased—often for months—and who might have returned to their former occupations after very brief periods if real active treatment had been given at an early stage. Hospital treatment was not sufficiently intensive or persistent; passive treatment, in the form of massage and the like, was in many cases a pure waste of time and energy; the coöperation of the patient in active treatment, which was the biggest factor in recovery, was generally neglected; surgical supervision, which was necessary to give the stimulus and confidence leading to coöperation, was too spasmodic to be effective; men were discharged from treatment before real proof of function had been obtained; and the mental factor present in all and prominent in many was usually ignored.

In National Health Insurance practice, he believed, there was no active treatment available for the many men who needed it for their recovery, and he thought that under the present conditions of panel practice such treatment was impossible. He urged that both the hospitals and the National Health Insurance authorities, who received large contributions from industry, should give this problem their serious attention with a view to forming some service which would reduce the present colossal wastage to reasonable proportions. It seemed to him that the traumatic cases must be completely separated from the ordinary work of the general hospitals. Traumatic centres should be established throughout the country, with specially trained resident personnel, controlled by orthopædic surgeons who had made a specialty of this class of work, and free facilities should be provided for treatment in these centres, for all panel cases which were proving resistant or which required active treatment for their recovery.

Mr. R. Watson Jones agreed with Dr. Moore that far too few workmen recovered so completely from industrial injury as to be capable of early and full re-employment. The traumatic surgeon should solve the problem primarily by raising the standard of fracture treatment, and by remaining satisfied with no result other than a limb indistinguishable from normal. Too often in the past minor degrees of angulation, slight displacements, and the lesser degrees of shortening had been accepted as quite satisfactory results, and only too frequently peri-articular adhesion formation, lateral instability of joints, hypotonicity of muscles, and recurring swelling of limbs had been entirely overlooked. The limb which was indistinguishable from normal could be secured in the great majority of fracture cases by conservative methods, provided that the surgeon placed great reliance on the control of post-reduction radiograms, and showed a greater willingness to remanipulate when necessary a second or a third time. It was equally important that disuse changes in muscles, joints, and circulation should be anticipated and prevented by early functional activity.

Few workmen deliberately malingered from the early days of an injury solely with the object of making money. On the other hand, if minor disabilities were allowed to remain, no workman could be blamed for fearing that his incapacity might increase with the strains of work, or that his incapacity, however slight, might lead to his early discharge on the grounds of inefficiency. The exaggeration and malingering which resulted could have been avoided by achieving a more perfect result. Traumatic neurasthenia and other functional disturbances should often be regarded as avoidable complications of industrial injury. They were due to excessive hospitalisation, or to the adoption of passive methods of treatment such as massage, splints, and apparatus, in place of exercises practised by the man himself, or better still, of occupational activity from the early days of the injury.

Mr. Bryan McFarland said that segregation of fractures was not a complete remedy for the wastage. It was essential to maintain close liaison with a general hospital with its minor injuries. The cases with trivial injuries were often those in which there was delay in returning to full work. Moreover, teamwork was essential in dealing with patients who might have at one time damage to an eye, a spleen, and a femur. Pending the building up of some ideal scheme, such as was suggested at Alder Hey, a very great deal could be done at once by close coöperation between the employer and the surgeon responsible. If an employer would communicate with the surgeon immediately and would work with him, there would be none of the gaps which Dr. Moore had shown to be the cause of wastage. Thus the legal implications would be avoided. For whatever might be said to the contrary, the thought of possible compensation for their injury was immediately present in the minds of certain men, and once they had "started proceedings" a cure was unattainable. Even when cured how could they be proved fit for work? In Liverpool it seemed to be increasingly difficult to prove that a fit man was fit. With adequate early collaboration of surgeon and employer such proceedings would be short-circuited.

It was Mr. McFarland's experience at the David Lewis Northern Hospital that those firms who carried their own insurance coöperated most effectively and with a minimum of wastage; attempts to obtain the coöperation of an insured firm to curtail the unemployable period, or to reduce ultimate disability, were met with the reply "we are insured," while the insurance company answered apathetically, "we are covered." If the employers would do their share, doctors would most willingly assist them.

Dr. J. BERKSON said that just as payment for sickness and payment for claims under the Workmen's Compensation Act were separated, so should the treatment of industrial injuries be separated from the treatment of ordinary illness. Patients with industrial injuries having massage treatment came to their panel doctor for a certificate of incapacity, and when he wished to sign them off as fit, he was told that the patient had to go back to the out-patient department in four weeks, and therefore was not fit to start work. In some cases that went on for months. If the panel practitioner were not allowed to give certificates of incapacity when his patient was attending for treatment at hospital one quite important cause of wastage would be got rid of.

Mr. H. R. BICKERTON thought that employers should not be asked to shoulder any more financial burdens until the profession was satisfied that they were getting full value for the money they were now contributing to the health services of the country. In some districts much had been done to lower the cost of litigation under the Workmen's Compensation Act without hardship to the disputants, and he urged medical men to coöperate with him with this aim in view. The junior men at the Bar might oppose it, but he knew that the senior men would support the medical profession. Many cases as conducted to-day only brought discredit on the medical witnesses and injustice to the genuine workmen.

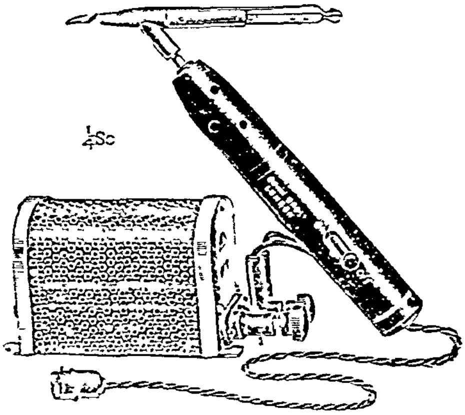
Dr. K. COBBAN, speaking as a general practitioner in a mining district where there were many accidents, said it had been his experience that most patients were eager to get back to work. He did not think that the treatment of the long-standing cases could be carried out by the general practitioner, for it necessitated attendance at hospital; nor did he think that the usual massage treatment carried out at present was efficacious. He would advocate its replacement to a large extent by active movements of the injured parts, and especially by curative workshops.

LUCY BALDWIN MATERNITY HOSPITAL.—Last week Mrs. Stanley Baldwin opened an extension of this Stourport hospital. Sir Julien Cahn, who paid the entire cost of the original building and its equipment, has also borne the cost of the enlargement which increases the number of beds from 11 to 16. The accommodation is divided into one eight-bed ward, one four-bed ward, two one-bed private wards, and two isolation beds. Additional bedrooms have been provided for the nurses and the nursery has been enlarged.

NEW INVENTIONS

METRI-CAUTERY FOR INFECTED CORNEAL ULCERS

THIS instrument is a modification of the design of Prof. Wessely and has been proved valuable (*a*) in arresting septic corneal ulcers that have not yet developed hypopyon; (*b*) in checking the progress of severe hypopyon ulcers and leaving even in advanced cases a very moderate scarring, allowing sometimes a surprising degree of vision. The point should be heated from the main electric supply till the thermometer registers 75° C.; it should not be applied over 85° C. A gentle stroking of the surface of the ulcer for a few seconds usually suffices. The process may be repeated later if any fresh advance is noted, but then, as a rule, only to the advancing edge. The instrument has proved in my hands much less damaging than the actual cautery even at a dull red heat and by the "approach" method—i.e., not touching.

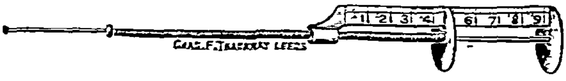


The instrument is made by Messrs. Down Bros., St. Thomas's-street, London, S.E.

A. CHRISTIE REID, M.D. Aberd.

A PLIABLE RULE

CLINICIANS have often found difficulty in the accurate measurement of lesions occurring on curved or obscured surfaces in the mouth, pharynx, and other sites which are inaccessible to the ordinary ruler. To facilitate such investigation I have designed a pliable rule as shown in the accompanying figure. To determine the size of a lesion bend the pliable wire to the desired curve, lay the blunt point on the further edge of the growth, and slide the outer tubing until it is in contact with the nearer edge. Then read the measurement off on the handle. Suitable finger-rings can be provided, and also small slidable indicators for recording several measurements during operations. The instrument is constructed entirely of metal, and it can be easily sterilised. The rule is now being used successfully at the Manchester and District Radium Institute.



Mr. Charles F. Thackray, Park-street, Leeds, is the maker.

DAVID A. HERD, L.R.C.P., L.R.C.S. Edin.

REVIEWS AND NOTICES OF BOOKS

Children's Tonsils In or Out

By ALBERT D. KAISER, M.D., Chief Pediatrician, Rochester General Hospital, N.Y. London: J. B. Lippincott Company. 1932. Pp. 307. 21*s*.

IN order to collect information which might strengthen, or weaken, the belief that a child's development may be retarded by the presence of tonsils and adenoids, and that improvement in the health is likely to follow their removal, Dr. Kaiser has undertaken to study the effect of operation on a large group of children by observation over a period of ten years, and by comparison over a similar period with children whose tonsils and adenoids had not been removed. This has entailed an immense amount of labour, follow-up studies having been made on nearly 5000 children. In two preliminary chapters Dr. Konrad E. Birkhaug, associate professor of bacteriology in the University of Rochester, discusses the anatomy, physiology, and bacteriology of the tonsils; he quotes a large number of bacteriological reports and finds that the *Streptococcus hæmolyticus* is very common in apparently healthy throats, not only on the surface of the tonsils, but in the crypts, and he mentions the work in England of J. Ramsay and C. M. Pearce, who found the hæmolytic streptococcus in 78 per cent. of cases examined by their method of tonsil puncture. A. L. Bloomfield and A. R. Felty also found, during an epidemic of tonsillitis among nurses at the Johns Hopkins Hospital, that hæmolytic streptococci were the predominating organisms, but that the number of colonies obtained from any individual case bore no relation to the severity of the clinical symptoms and signs. Such findings make it difficult to accept bacteriological evidence of tonsillar disease. Dr. Kaiser then considers the effects of operation. He finds that uniformly good results can be expected from the removal of hypertrophied or infected adenoids on children who have nasal obstruction or catarrhal or suppurative otitis media.

The greater part of the book, however, is taken up by the analysis of the results of tonsillectomy on the incidence of a large number of diseased conditions. It must suffice here to enumerate them: sore-throat, the common cold, laryngitis, bronchitis and pneumonia, cervical adenitis, ear infections, sinusitis, scarlet fever, diphtheria and other infectious fevers, rheumatism, chorea and heart disease, nephritis and pyelitis, tuberculosis, dental caries, asthma and hay-fever, malnutrition, anorexia, cyclic vomiting, diabetes, general intelligence, and mental deficiency. A few of his conclusions are noteworthy. On the important question of the rheumatic affections, he finds that about 30 per cent. fewer cases of rheumatism occur in children whose tonsils have been removed than in control children where no operation was performed, but that, when a rheumatic infection has once manifested itself, tonsillectomy does not safeguard the child against recurrent attacks. The occurrence of nephritis is somewhat less in tonsillectomised than in unoperated children, though the difference is not great enough to warrant much enthusiasm. The removal of infected tonsils after an attack of acute nephritis is to be desired. The effect of tonsillectomy upon the incidence of scarlet fever is statistically insignificant and, in children whose tonsils have been removed, there is no evidence that the disease is less severe or less likely to cause complications; but a child with his tonsils removed is definitely less susceptible to diphtheria, and the operation hastens the elimination of organisms from the throat of the diphtheria carrier. There is little effect on the occurrence of measles, chicken-pox, mumps, or poliomyelitis; or, somewhat unexpectedly, on the incidence of repeated attacks of unexplained fever. In contradistinction to removal of adenoids, tonsillectomy after the fifth year offers very little protection against primary and recurrent infections of the ear, and mastoid involvement after otitis media occurs with equal frequency in the presence and in the absence of tonsils.

After due allowance has been made for the limitations of the statistical method the book remains a monument to the author's industry and research. In spite of its flippant title, it is a serious contribution to medicine, which will greatly assist in confirming or modifying our views on the value of tonsillectomy in individual cases.

Effets éloignés du pneumothorax thérapeutique

By L. DE WECK, Médecin-Chef du Sanatorium Victoria (Montana). Paris: Masson et Cie. 1932. Pp. 129. Fr.16.

Dr. de Weck's work is based on the study of 51 patients who completed a course of treatment by artificial pneumothorax during the period 1911 to 1920. This record of the durable relief or lasting cure of consumptives by collapse therapy should help to dispel the doubts still expressed as to its permanent value, and should encourage those whose faith in pneumothorax treatment has not yet the support of long experience. The book is more than a mere record of therapeutic successes. Dr. de Weck has made a noteworthy contribution to the study of the "de-inflation" period, of the response of lungs and pleura to the negative pressure which results when refills are discontinued, and of the complications which sometimes accompany pulmonary re-expansions. Reproductions of radiograms illustrate the text and add to the value of this excellent little book.

Diseases of Old Age

By F. MARTIN LIPSCOMB, M.R.C.P., Major R.A.M.C., Deputy Surgeon at the Royal Hospital, Chelsea. London: Bailliere, Tindall, and Cox. 1932. Pp. 472. 12*s*. 6*d*.

WHEN the student or resident leaves his training hospital he is rather inclined to think of any sick person over the age of 65 as someone to be got rid of as soon as possible, either by means of a bottle of medicine or an "infirmary order." His consternation on starting practice to find that a large proportion of his time is taken up by old people is enhanced by his difficulty in obtaining information to fill this gap in his education. Dr. Lipscomb has endeavoured to give a straightforward clinical account of those maladies which have a high incidence in old age, and those which are conspicuously modified at this period of life or are of special diagnostic interest. Though the book is primarily medical, it includes a chapter on some surgical aspects of old age as well as on its general management; ætiology and pathology have been reduced to a minimum. Mistakes are few; it is not clear, however, to what the reference to page 104 refers in the chapter on the urinary organs. The best sections are those on the heart, the nervous system, and the mind, and they are illustrated throughout by the author's personal experiences among the Chelsea pensioners. Not enough stress, perhaps, has been laid on the extreme difficulty of regulating an aged person's bowels to the mutual satisfaction of the patient, the nurse, and the medical attendant, nor on the fact that the low abdomen of the old reveals quite a number of masses apt to be diagnosed by the unwary as carcinoma. Even if such a diagnosis should be correct it would probably be unwise to mention it, since carcinoma grows so slowly in the very old that they may easily die of some intercurrent disease before the growth has caused any symptoms. This book is essentially practical and well balanced, of great interest to all, but especially suitable for the young practitioner.

The Gold-headed Cane

By William Macmichael, M.D. Edited by Prof. Herbert-Spencer Robinson. New York: Froben Press Inc. 1932. Pp. 223, with index and copious notes. $3.50.

The sixth edition of William Macmichael's well-known and fascinating book has appeared in attractive form in the series entitled Historia Medicinæ now being issued from the Froben Press. The edition is edited, with explanatory and illustrative notes, by Prof. H. S. Robinson, well known as an expositor of English literature in American university centres, and author of "English Shakespearian Criticism in the Eighteenth Century," and other works of literary interest. This new edition contains the original illustrations to the 1828 edition—the second edition—as well as hitherto unpublished portraits of Macmichael and details of his life and family. Macmichael was an interesting man. He graduated M.D. at Oxford in 1808, was elected Radcliffe Travelling Fellow in 1811, and interpreted the responsibilities incurred by visiting during the next five or six years Russia, Turkey, the Danubian Principalities, and Palestine. He was elected a Fellow of the Royal College of Physicians of London in 1818; in 1824 became registrar to the College, and while holding that office had the happy idea of publishing the biographies of five leading London physicians of the eighteenth century who in succession had been in possession of a gold-headed cane, now the property of the College. The five physicians were John Radcliffe, Richard Mead, Anthony Askew, William Pitcairn, and Matthew Baillie, and on the death of the last the cane was presented to the College by his widow. It bears on its crutch-handle the arms of its five distinguished owners.

The first edition of "The Gold-headed Cane" appeared in 1827, and a second appeared in the following year with considerable additions, and has formed the text of subsequent issues. Throughout its life of over a hundred years the work has met with such popular favour that it has earned fairly the hard-worked epithet of a classic. The device by which the cane is made the describer of its five famous possessors—a popular narrative method a hundred years ago—was carried out with such literary skill that constantly the reader feels that he is listening to the views of a human contemporary of the famous doctors, so large a proportion of whose patients were famous also. Radcliffe, after being in ill odour with King William and Queen Mary, refused to attend Queen Anne in her last illness apparently because he was not properly summoned; Mead, friend and physician of Sir Isaac Newton and Pope, would not continue to treat Sir Robert Walpole unless a political prisoner, a colleague, was pardoned; Askew knew all the great scholars of the day, and declined to be physician to Queen Charlotte on her arrival in England (the "Cane" is the authority for this statement). The lives of Pitcairn and Baillie do not suggest that the Cane when in their possession was carried into quite such aristocratic circles or conducted with quite such a sense, due or undue, of importance, but Pitcairn and Baillie were fine representatives of the profession in the eighteenth century, and the latter made valuable additions to pathological knowledge.

The special value of the new edition of "The Gold-headed Cane" lies in Prof. Robinson's profuse and accurate notes. Practically every personal reference made by the Cane to a vast number of distinguished persons with whom its five owners had been associated is explained by biographical notes, quotations, and literary allusions. Students of medical history will be grateful to the learned and industrious editor.

Food, Health, Vitamins

Fifth edition. By R. H. A. Plimmer, D.Sc. Lond., Professor of Chemistry in the University of London at St. Thomas's Hospital Medical School; and Violet G. Plimmer. London: Longmans, Green and Co. 1932. Pp. 143. 3*s*.

This useful and inexpensive little book is brought up to date in a new edition, which contains notice of all the most important contributions to the subject which have been made since the appearance of the last edition. These include particularly work on the relation of carotene to vitamin A and attempts to isolate the antiscorbutic vitamin. There is a brief useful addition on the separation of vitamin A from vitamin D, and of B_1 from B_2, and the section on pellagra has been considerably modified. Hypervitaminosis D receives attention, and stone in the bladder is dealt with from a different point of view. There is no bibliography, although many names are mentioned, followed by a date in brackets; in a few instances the full reference is supplied in a footnote.

1. Management of the Sick Infant

Fourth edition, revised. By Langley Porter, B.S., M.D., M.R.C.S. Eng., Professor of Clinical Pediatrics; and William E. Carter, M.D., Instructor in Pediatrics at the University of California Medical School. London: Henry Kimpton. 1932. Pp. 763. 42*s*.

2. The Infant: A Handbook of Management

By W. J. Pearson, D.M., F.R.C.P., Physician-in-charge of the Children's Department, University College Hospital; and A. G. Watkins, M.D., M.R.C.P., B.Sc., Physician in Children's Diseases, Cardiff Royal Infirmary. London: H. K. Lewis and Co., Ltd. 1932. Pp. 47. 2*s*. 6*d*.

1. Preparation of a fourth edition of this ambitious compendium has enabled the authors to include references to almost all the most recent mechanical aids to the treatment of disease in childhood. English readers will be somewhat staggered at their number and diversity. Illustrations are given of the Roth-Barach carbon-dioxide-oxygen tent, the electrically heated Hess bed, and Hess transportation bag for premature infants, and of both hydraulic and electric breast-pumps. The technique of nursing an infant on the breast, however, is dealt with in exactly six lines. The section on "the radiogram" is also very inadequate. Considerable space is devoted to methods

of investigation as well as those of treatment, and it is rather surprising to find a detailed description of the diagnosis of intussusception by the barium enema whilst the subject of encephalography is not even mentioned. Again, we note that of four directions given for dealing with a choking infant one is to call a laryngologist and another is to read Chevalier Jackson's "epochal work" on bronchoscopy.

The book is divided into three sections, the first dealing generally with such subjects as "cough," "vomiting," "prematurity," and "nutrition," the second being a systematised though slightly hurried account of disease in early childhood, and the third giving a detailed description of the methods employed in its investigation and treatment. Of these sections, the last is unquestionably the most valuable. Not only is it well illustrated, but the various methods are for the most part concisely and clearly described, and the authors have collected in one volume a great deal of material that is nowhere else available. This section alone should make the book of value to all who have to deal with infants, either in hospital or private practice, and should make it as well known to pædiatricians in this country as it is in America.

2. Of the numerous books which have appeared recently on the subject of infant management, this probably succeeds in compressing most information into the smallest space. Much of the matter is tabulated, but is nevertheless presented in a readable way. A particularly useful section is devoted to the relative cost of various artificial foods, which should be appreciated by the practitioners, infant welfare workers, and others to whom the book is specially directed. We are inclined to think that more than two and a half pages might well have been devoted (perhaps at the expense of one or more of the several blank pages provided for notes) to the technique and difficulties of breast-feeding in view of the emphasis on the importance of mother's milk with which the first chapter opens. Apart from this, however, the book succeeds in its object of making readily accessible information which has usually to be sought in large text-books.

Growth

By the late J. LORRAIN SMITH, M.D., D.Sc., F.R.S. Edited by J. S. HALDANE, C.H., M.D., F.R.S. Edinburgh: Oliver and Boyd. 1932. Pp. 135. 6s.

No one with any familiarity with the subject will put this book down and feel that they have learned many facts about growth which they did not know before. They will be less satisfied, for their natural reaction will be to say to themselves, "that is an interesting idea, I should like to have a talk with him about that," and they will have a good many questions to ask and things to think about. And they may well see for the first time that some of the simplest phenomena of growth are not nearly as simple as they seem. Lorrain Smith would, we think, be well content to have roused the curiosity of those who read the fragmentary chapters and notes which he had written towards a formal treatise, and which have been gathered up by his daughter and life-long friend. They do not form a coherent whole, there is a good deal of repetition and in some places obvious lacunæ. Except for the tolerably complete chapter in which he argues for the mutative hypothesis of malignancy, they are more like small talk about growth—just the sort of talk which his friends would expect from the man who sits writing at his study table in the delightful frontispiece—gentle, suggestive, in flashes of some happy phrase sometimes illuminating and never wholly conclusive; he was too much of a philosopher for that. The part of the book which he had sketched out is mostly about the growth of individual cells, from their beginnings as independent units to their full maturation, and he evidently thought a good deal about the examples in which maturation means death, as in the skin and the red blood corpuscles. But he would have us wonder how it is in the growth of the skin, for example, that only one of the two cells which come by the division of a germinative cell progresses to the stratum corneum, while the other remains to divide again. It is indeed a problem; no wonder Lorrain Smith wanted to get more pathologists interested in it. For, as he truly says, cell growth is one of the really fundamental things in their science.

British Journal of Children's Diseases

THE October-December issue (vol. xxix.) contains a paper on Experimental Studies on the Filtrable Microbe of Scarlet Fever and on Activators in Relation to Hæmolytic Streptococci, by Dr. T. Toyoda and Dr. Y. Futagi, of the Japanese Government Isolation Hospital at Dairen, Manchuria. They first discuss Di Cristina's theory concerning the filtrable microbe of scarlet fever which was supported by Caronia and Sindoni. Like Bürgess and Meyer in Germany the Japanese observers carried out investigations whose results contradicted those of the Italians. As regards the question as to whether any other factor than streptococci is needed in the ætiology of scarlet fever, Toyoda and Futagi failed to discover the filtrable microbe described by Zlatogoroff on the diphtheroid bacillus of Mandelbaum, who regard their organisms as activators of the hæmolytic streptococcus of scarlet fever. Toyoda and Futagi conclude that there is no necessity to consider some other unknown microbe besides the hæmolytic streptococcus as responsible for scarlet fever.—Dr. G. T. Cook contributes a paper On the Association of Pulmonary Changes with Rheumatic Pericarditis, based on a study of the literature and observations on 13 personal cases. He emphasises the frequency with which pulmonary signs are found in association with acute rheumatic pericarditis, and states that they occur much more frequently on the left side than on the right. The pulmonary condition which may arise quite independently of any pleural or pericardial effusion shows considerable variation both in the severity of the signs and symptoms and in their duration. The histological appearance of the lungs is these cases is one of collapse and passive congestion rather than that of a specific inflammatory condition. Cook suggests that the pulmonary condition is an active massive collapse of a portion of the lung, being due to reflex disturbance of the vagus and sympathetic innervation of the lung from inflammation of the pericardium.—In a paper entitled A Pedigree of Hæmophilia; Dr. W. J. Rutherfurd records his observations on a pedigree of five generations in which seven cases of hæmophilia were known to have occurred. Of the 66 individuals in the pedigree there were 54 whose sex was reported, 21 being males and 35 females; 14 of the 66 died in infancy or early childhood.—In his paper on Some Pædiatric Eponyms, IV.—Sydenham's Chorea, Dr. W. R. Bett refers to Hecker's account of epidemic chorea in the Middle Ages, and reproduces Sydenham's description from the Schedula Monitoria, illustrated by a portrait of the English Hippocrates.—Dr. E. W. Goodall records A Case of Recurring Serum Rash in a girl aged 2 years, who after an injection of 12,000 units of antitoxin for diphtheria developed six times in the course of six weeks an erythematous rash such as is common after serum injections, with an interval between each rash. There was no pyrexia nor any other symptom beyond the occurrence of an abscess at the site of injection with any of the rashes.—The annual index in this issue provides a guide to contemporary pædiatric literature.

THE LANCET

LONDON: SATURDAY, JANUARY 14, 1933

MASKED HYPERTHYROIDISM

For the clinician one of the most important advances made of late in our knowledge of thyroid disease is the discovery—or perhaps, more accurately, the rediscovery—of a condition which has been called in America "masked hyperthyroidism." Elsewhere in this issue Dr. John Towers records a series of cases of this type. From work done chiefly in America we now know that thyroid secretion may do no little damage to the heart in the absence of those classical signs, such as changes in the eyes, wasting, nervousness, and obvious goitre, which can be seen at a glance, and on which the diagnosis of Graves's disease has in the past depended. All these symptoms may be absent in a patient suffering from heart failure, and yet the failure may be correctly attributed to the action of an abnormal thyroid secretion, perhaps over a long period of time, and certainly on an organ rendered susceptible by increasing age. The adjective "masked" is therefore well applied. The condition is seen, apparently, only in people at or past middle age, and while it is not a new idea that the classical signs of thyroid intoxication tend to be much less conspicuous at this age than in the young, the cases covered by the new term show these signs only in minimal degree or not at all. T. P. Dunhill's thesis that the infinite variety of the clinical picture of thyroid intoxication can be explained by variations in three factors—the stimuli, the thyroid gland, and the organs affected by the disordered secretion—is an attractive one, and it may be that masked hyperthyroidism can be best accounted for along these lines.

Most often the patient will present herself—the female predominates, but the male sex is not excluded—with symptoms suggesting heart disease, especially palpitation. This may occur with sinus tachycardia, sometimes with premature beats in addition; with auricular fibrillation, which is likely to be paroxysmal at first; or even with normal rhythm without tachycardia. Congestive heart failure of thyroid origin is found only in association with permanent auricular fibrillation. Whether the thyroid heart enlarges or not, and whether or not any histological changes, specific or otherwise, are produced in the myocardium, are matters that have been controversial for some time. From the practical point of view they do not affect the clinical fact that the thyroid can be responsible for cardiac disturbances up to the point of congestive failure. What, then, are the points which will make the diagnosis probable? The eyes show no prominence but a slight staring expression, or sometimes a momentary lift of the upper lids revealing the sclerotic will be a suggestive sign. There may be a salmon tint of the skin, fine tremor, and minimal enlargement of the thyroid, or even undue hardness alone. Improvement with administration of iodine, and increase in the basal metabolic rate (though a normal rate does not negative the diagnosis) will be additional evidence. The character of the apex-beat and of the first sound may give a clue, as is emphasised by Dr. Towers. The persistent finding of a high pulse pressure will also be suggestive. Here it may be mentioned that thyroid intoxication has sometimes been considered an occasional cause of diastolic hypertension; the failure of thyroidectomy in two of Dr. Towers's cases with high blood pressure of this type to lower the pressure, while relieving the certain symptoms of excessive thyroid secretion, does not support this view. Finally, the shape of the heart on X ray examination may clinch the diagnosis.

It cannot be denied that the evidence for incriminating the thyroid in some cases of cardiac disturbance is at times slender; yet, in others, the diagnosis can be certain, and appropriate treatment may mean cure, whereas a mistaken diagnosis may mean early death. The first essential in diagnosis is to bear in mind the possibility of a goitrous origin of the symptoms in any middle-aged patient with palpitation, paroxysmal auricular fibrillation, or permanent fibrillation with congestive heart failure. Once the diagnosis of masked hyperthyroidism with heart disease is made a partial removal of the gland is always warranted. Not very long ago cases of cardiac failure associated with thyroid disease were refused operation on the ground that it was too dangerous. With further knowledge of the true risk, and improved methods of pre-operative treatment, this view has been reversed; and it may be said that the greater the heart damage, the slighter are the chances of recovery without operation.

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TUBERCULOSIS IN SOUTH AFRICAN NATIVES

The committee appointed seven years ago to investigate the extent of tuberculosis in South Africa, more particularly in its relation to native races, and to formulate measures for the determination of the morbidity and mortality from tuberculosis amongst the gold mining population of the Rand, has issued a report, summarised on p. 100, which merits careful study. It provides an extensive survey of the South African native from practically every angle bearing upon tuberculosis—anthropology, epidemiology, pathology, and clinical medicine. Since the natives working on the goldfields now number over 200,000, and the incidence of tuberculosis among them is estimated for the period 1928–29 at 6·62 per 1000, the mine population directly affected by this study is large; and in view of the constant migration to and from the mines the study has an indirect bearing on the health of natives in their own territories. The inquiries were conducted on a colossal scale. Intradermal tuberculin tests were made on 94,000 native mine workers; a single injection of 1/10 c.cm. of 1/5000 O.T. was used at first and the dose was subsequently reduced. The important facts which emerged from these tests were :—

(1) With the strengths of tuberculin used only 65 per cent. of the subjects yielded a positive reaction.

(2) Despite a probable under-estimate of the true numerical strength of the positive group, the incidence-rate per 100,000 of tuberculosis was more than twice as high in the positive group as it was in the negative group.

(3) The more positive the reaction the greater the liability to tuberculosis.

The natives tested were all carefully examined, and if tuberculosis was confirmed they were repatriated and advised not to return to the mining fields. Another group of natives investigated was a collection of chronic cases of tuberculosis detected by mine medical officers after the natives had worked five or more years. Periodical weighings are found to be the most practicable method of early diagnosis, and by the Regulations made under the Miners' Phthisis Act of 1925 any native showing a marked decrease of weight (5–6 lb. or more) between two consecutive weighings, must be referred for special examination. For various reasons no attempt is made to undertake prolonged systematic treatment in the mine hospitals, so that the medical officer has, therefore, only to make up his mind whether or not the native —who mostly clamours to be sent home as soon as he is put off work—is fit to be repatriated. The patients retained in hospital are those who are deemed too ill to travel. Little can be done for these cases, which generally end fatally in a very short time. No complete return of survival periods was obtainable, but figures submitted by four mine hospitals showed that for 145 consecutive cases of deaths from tuberculosis the average survival period was 28 days. An interesting comparison between native and European tuberculosis is afforded by records of 200 consecutive autopsies on tuberculous natives (without silicosis) and 200 autopsy records supplied by the Victoria Park Hospital, London. In the natives, for example, cervical glands were more rarely, other glands more commonly involved, and involvement of the spleen, liver, and other abdominal organs was far more common among the natives. The writers of the report regard these native cases as approximating closely to the type of acute tuberculosis of non-immunised races, which was first differentiated by BORREL as an outcome of his classical investigations in Sengalese recruits. The South African mine native is not, however, as they have shown, completely virgin soil. The actual extent of the incidence in native territories is unknown, no relevant vital statistics being available. Dr. PETER ALLEN, medical superintendent of the Nelspoort tuberculosis sanatorium made for the committee a tuberculin survey which revealed a high degree of tuberculosis amongst the southern group of the native territories and a lower degree in the northern group. Between the ages of 5 and 15 tuberculisation was more marked in girls, who do not go to the mines, than in boys; at later ages the boys "caught up." Out of 694 natives repatriated from the mines with tuberculosis during the years 1926–29, Dr. ALLEN followed up 475, and his records make grim reading. Two years after repatriation 60 per cent. were found to have died, and of the rest 4 per cent. were fit to return to heavy work, 10 per cent. were not fit for any work, and 26 per cent. were fit for light work at their homes. Although it cannot be assumed that the repatriated tuberculous plays no part in the spread of the disease in the girls, it is equally impossible to believe that he is the sole agent responsible for the wide dissemination. The economic situation in the native territories often forces the native to seek work from the European in industries where he may either acquire a primary tuberculous infection or light up a smouldering lesion which he already possesses.

The inferences to be drawn from these exhaustive inquiries are of deep significance. The urgent need for a radical improvement in the medical services in the native territories has led the committee to advise the appointment of a travelling medical officer with the special charge of dealing with tuberculosis amongst repatriated workers. Anti-tuberculosis measures, they say, should be provided in urban locations, and the committee are also of the opinion that there is scope here for investigation of the value of a B C G vaccine amongst the children of urban locations where tuberculosis is rife. They recommend that travelling conditions to and from the native territories should be investigated, and note that there is still room for improvement in the accommodation provided in the mine compounds; notably in the direction of fewer occupants in each room and of better separation between individual bunks. A period of rest and a light meal during working hours, which involve an average of ten and a half hours underground and eight hours' continuous work without food, is recommended, with the addition of vitamin A to the dietary. The protection of natives from sudden changes in air temperatures and velocities by suitable ventilation or by the provision of extra clothing is also advised. Special anti-tuberculosis measures on the mines should include a stringent initial examination to exclude natives arriving with latent tuberculous lesions; a gradual acclimatisation to strenuous mine work; periodical examination of all natives with over five years' total mining service; and continuous efforts to improve on the present admittedly high standard of dust suppression without increasing humidity in the mines. Finally, in order to ensure continuity of policy the committee propose the appointment and maintenance by the Chamber of Mines of a standing advisory health committee. As the committee remark, "tuberculosis of the native is not only a native problem. It is the problem which touches the health of the white community very nearly and will do so to an increasing extent. . . . Those who take the long view will agree that the sooner the length and breadth of the problem is made better known through the collection of vital statistics the better for the Union of South Africa."

No one who studies this report will fail to be stirred by the plight of the native infected with tuberculosis. The degree of immunisation acquired by the South African native seems to be about that of a European child and falls far short of that of a human adult; and the protection afforded to him when he seeks work entailing risk of infection must be designed on this assumption. Prof. Lyle Cummins, in a commentary which is incorporated in the report, discussing the failure of the authorities to provide an adequate medical service for the black populations in the native territories, sums up well (p. 290) the impression left by the report. He says "to one who is merely a visitor to South Africa, the sight of such a dependant population, giving so much and obtaining so little in return, is calculated to arouse feelings much deeper than surprise." That much can be accomplished on relatively simple lines is proved by the success of the medical services organised by the mining companies for the natives during their actual periods of work on the Rand; a provision which offers a sharp contrast to the almost complete lack of medical and surgical facilities in the Transkei and Ciskei, where the witch-doctor still exploits the credulities and the necessities of the sick. Through nearly half a century of trial and error the mining industry has learnt its lesson—that a healthy native working population is worth paying for. The issue of this report is timely, since gold mining in Kenya must involve the application of knowledge gained in the Transvaal if the native labour corps recruited for the development of the mines is to be protected as far as possible from the dangers associated with this work.

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PAIN AND THE DOCTOR

August Bier once wrote, "The doctor should cause no pain"; and the saying, though a hard one, merit attention, coming as it does from one responsible for numberless appliances, large and small, for relieving or diminishing painful or uncomfortable sensations. The late Dr. Albert Krecke,[1] in an intimate study of doctor and patient which well describes the state of mind of sick people, echoes the warning given scores of times to the medical student, and as often forgotten: "Do not touch; look." It was one of the heritages of C. B. Lockwood's teaching that his pupils never forgot this maxim. But beyond the skilful use of eyes there must also be the skilful use of fingers. Speaking last term to students of this art of handling living flesh, Mr. Wilfred Trotter[2] said:—

> "Here at any rate is something everyone can teach himself. Hands coördinated to smooth, firm and gentle movement are to the sick body the complement of the attentive receptive mind. . . We must not use the excuses that patients expect to be hurt, that they accept with resignation the clumsy dressing of wounds, and allow themselves to be examined by a series of crude prods and bangs. When you ask a patient if you are hurting him, nine times out of ten he will reply with touching cheerfulness 'Not yet, doctor.' What a succession of iron thumbs is disclosed by that answer!"

This passage gives colour at least to the accusation lately made by a lay writer, Mr. Gerald Heard,[3] that the medical profession does not take pain seriously enough.

Mr. Heard is explicit. "Quite half of the people who stay away from you when they should come to you," he says, "are staying away frankly because they dread torture. They will stay till too late because they believe that you are not actively concerned to save them suffering—you are exclusively concentrated on trying to save life." We know that this statement is not true, but like pain itself it is a genuine symptom of disorder in our relation with patients. There is, in other words, something in the criticism. In his gladness at finding a warning signal that he can read and act upon, the doctor may sometimes forget that the patient, after all, does not come seeking a sign. Mr. Trotter, in the address already quoted, emphasises the difference in aim:—

> "The ordinary patient goes to his doctor because he is in pain or some other discomfort and wants to be comfortable again: he is not in pursuit of the ideal of health in any direct sense. The doctor on the other hand wants to discover the pathological condition and control it if he can. The two are thus to some degree at cross-purposes from the first and unless the affair is brought to an early and happy conclusion this divergence of aims is likely to become more and more serious as the case goes on. The good doctor therefore has to learn to serve two objects at the same time—the diagnosis and treatment of the patient's ailment on one hand, and to keep him comfortable on the other."

If Mr. Stephen Leacock is to be believed—some of his pungent comments are quoted on p. 121 the modern doctor fails very lamentably to achieve this double service. And Mr. Leacock's satire certainly contains a regrettably large grain of truth. "The best thing that could happen to you," said an experienced practitioner to his young colleague, "would be to have a serious illness early in your career"; and one cannot help thinking that most of us would be the better (professionally) for serious illnesses at regular intervals all our lives. If the doctor really had the patient's point of view would he not be a little less light and airy about pain? Would he not ask himself more often whether it was really necessary, whether the new resources of medicine could not overcome it, whether the benefits of non-interference were worth the price? Sometimes, perhaps, we accept too readily the traditional view that pain is something which cannot be avoided. The patient knows that he can grin and bear it, if necessary; but he asks that the sacrifice of his comfort should be justifiable—justifiable not on some antique conception of the inscrutable ways of Providence, but upon the principles of modern medicine, interpreted and applied with common sense. Where cure is actually impossible or unlikely there is much to be said for being allowed to die at ease in Zion and to smile.

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[1] Von Arst und seinen Kranken. By Alfred Krecke. Munich: J. F. Lehmann. 1932. Pp. 378. R.M.6.

[2] Univ. Coll. Hosp. Magazine, Sept.–Oct., 1932, p. 212.

[3] Middlesex Hosp. Jour., July, 1932, p. 185.

Pain occupies a patient's attention in the present, and even when it is past its shadow darkens the future. A painful convalescence is likely to be a slow convalescence; recovery may be slow because pain focuses the mind on the existence of something wrong; the thoughts are anchored to disease. But it is the doctor's thoughts that should be so anchored; the pain should primarily be *his* concern, and as soon as he has interpreted its meaning he should take steps to abolish it. It may be answered that pain, since it is subjective, cannot be accurately measured; the language used to describe it, though at times full of colour, is vague and metaphorical and may be misleading. There can be little doubt, however, that were it possible to register pain in the same way that it is possible to register body temperature, far more notice would be taken of it. The stoic's mask would be snatched from him, with the result that what he describes as a mere nothing would have a unit placed before the cipher and possibly another cipher added. He would no longer be able to suppress the painful truth, and the physician would in consequence be in a better position to deal with it. We should be able, too, to gauge the problem of different individuals' reaction to pain, to admit more willingly than we do that certain people, and not always those who pride themselves on it, are far more sensitive than others.

Pain is important. None the less we doubt if it is the principal deterrent from medical treatment, as Mr. Heard makes out. It is chiefly the unknown that people dread—uncertainty, a strange environment, the interruption of a familiar routine. Pain, if necessary, most of us will accept; we ask, however, that we shall be treated as individuals who suffer, even though the doctor may remember us only as cases he has cured.

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THE MEDICAL STUDENT IN THE UNITED STATES

THE Association of American Medical Colleges appointed a commission, as long ago as in 1925, to study the various principles under which the medical curriculums of the country and the issues of qualifications were conducted. The commission was instructed to make suggestions for necessary reforms, and especially to note the directions in which action could be taken towards the improvement of university education in conformity with the needs of existing society. The Association, in coöperation with the American Medical Association, has already regulated the educational standards which the various States must bear in mind when issuing licences to practise, when a revision of conditions was found necessary with considerable frequency in order to meet abuses which had grown up under proprietary and commercial medical schools, certain of which had degenerated into manufactories for the supply of imitation degrees. Both Associations are to be congratulated on the success of their joint action, for during the past 25 years professional medical training in America has undergone radical improvement, as will be readily gathered from the report of the 1925 Commission which has just been issued,[1] while the scandal of bogus medical institutions has largely if not entirely disappeared. The personnel of the commission comprised recognised authorities upon medical education and university organisation, and the financial support was derived from the Rockefeller Foundation, the Carnegie Corporation, the Josiah Macy, Jr., Foundation, and the American Medical Association.

While from the report we can see how much has been done, we can see, also, how much remains to do. Although the various efforts to standardise medical education and to reform the bodies responsible for it have led to certain minimum requirements for proper instruction being universally met, there remain wide differences, both in ideals and in organisation, among the institutions, some of which are among the great medical centres of the world and some of which may have survived the scrutiny of the Associations not without a struggle, but are now proving their worth. The differences are found not only in buildings, equipment, and financial stability, but in the facilities and amenities forthcoming for ward and laboratory training, and represent the handicaps under which certain of the schools are labouring. This position has been made clear during the prolonged sittings of the commission by the regular issue of ad interim reports, from which could be gathered seriatim the nature of the problems with which the commission was dealing and the needs of the community to meet which the medical profession had to be equipped. The place of post-graduate education and the due scope of specialism had both to be visualised, as well as the conditions under which the students were trained and the hospital appointments were held, before concrete recommendations could be justified. These matters are discussed in the report before the details of the curriculum are taken up, in order that any reflections upon the training may be related properly to the entire professional life of the physician. In consequence, we get the feeling that the advocacy of certain principles has had throughout the common intention to render the doctor useful to the community in his sphere. For the same reason reference is made only incidentally to particular scientific work, to staff organisation, and to finance. All of these, as they influence the training of students, the selection of teachers, and the quality of instruction, are held to be so generally appreciated that to discuss them is superfluous. The value of the document lies in the resolve to regard the life of the doctor as an entity, and to present a picture of the training that should fit him best to serve his generation wisely in the home, the ward, or the laboratory.

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[1] Final Report of the Commission on Medical Education. Office of the Director of Study (Dr. Willard Rappleye), 630, West 168th-street, New York. 1932. Pp. 560, including appendix, tabular statement, and index.

The report closes with some brief notes on medical education in six European countries. Dr. WILLARD RAPPLEYE, who, under the designation of director of study has been the organiser of the commission, personally visited certain medical centres in this country, France, Germany, Austria, Sweden, and Denmark, so as to provide the commission with first-hand knowledge of European methods. The summaries of his impressions will be valued by our readers at a time when none of us conceals the feeling that medical education in our own country needs revision in many directions. Some whose cries for the revision of our medical curriculum are most vocal should have before them at least a skeleton of the plan under which the training of medical students in other countries is conducted, so that comparisons to the credit or discredit of our procedure may be instituted. For instance, the place taken by the State and by the universities in the group of countries visited by Dr. RAPPLEYE turns out to be nowhere exactly the same: licensing corporations exist with us which have no exact counterpart abroad; in Germany and Austria medical education is largely developed under the medical faculties of the universities, while with us it has owed its existence to the schools connected with independent hospitals. In this country the holding of a hospital resident appointment is not necessary before the issue of a licence to practise, but in certain American schools the experience of an internship is regarded as part of the basic training. The standards of premedical education and the opportunities for post-graduate expansion present also great variety in the different countries. These things come in for mention in their proper place in an orderly report. If they are often only alluded to, the allusion will be sufficient to remind us that changes made in an arbitrary manner have their risks, for they may jeopardise that entity to which the commission attaches high value, expanding one section—scientific or social—at the expense of other sections equally important. Coördination of effort to obviate duplication and to secure active participation of all in a common undertaking is, in condensed form, the message of a valuable document.

ANNOTATIONS

DEHYDRATION DURING OPERATIONS

SURGEONS have long recognised, more or less empirically, that dehydration plays a considerable part in causing post-operative shock, and rectal or parenteral injections of normal saline solution are widely and successfully used in treating this important complication of major operations. It would be more rational, however, to pay greater attention to the various factors responsible for the negative fluid balance, and in this connexion a paper by F. A. Coller and W. G. Maddock[1] should be welcome. They have analysed the losses of water through all possible channels in a series of operations, most of which were abdominal.

The most important and, to the superficial observer, the least obvious way in which water escapes is through the skin and lungs, which, even in the absence of visible sweating, normally dispose of a large fraction of the fluid which leaves the body. Coller and Maddock find that three-quarters or more of the fluid lost during an operation is accounted for by sensible and insensible perspiration. The excretion of water through the skin may indeed be increased up to as much as ten times the normal rate. This is mainly due to the high environmental temperature of the operating theatre, and to overloading of the patient with blankets. It is greatly augmented if the patient struggles under the anæsthetic. It should also be remembered that overbreathing provoked by ether or nitrous oxide will undoubtedly increase the elimination of water by the lungs. In comparison with perspiration the other factors tending to produce dehydration are relatively insignificant. The loss of blood, though usually greater than the surgeon believes, is not enough to influence fluid balance to any significant extent, except in operations involving extensive dissection of tissue, such as radical amputation of the breast. In such instances capillary oozing is perhaps more to blame than spurting vessels, and the sponges probably absorb, in addition, considerable quantities of interstitial fluid. To the above list two factors might be added which, it is to be hoped, apply to the past rather than the present. The first is pre-operative starvation, during which the body loses large amounts of its fluid reserves, irrespective of the water intake. The second is the over-enthusiastic use of purgatives and enemata before the operation.

There is a practical moral to be gained from the observations of Coller and Maddock. No one would deny the importance of keeping the patient warm while his heat regulating centres are disabled by the anæsthetic. But is it not possible that the modern patient is too lovingly swaddled in wool and hot packs?

THE KING'S FUND DOLL'S HOUSE

IT is difficult to say where the charm lies of a common object, such as a chair, made on a scale which ignores ordinary dimensions; nor is there any good reason, unless psychology can provide one, why a chair in a doll's house should be more generally pleasing than the gigantic throne of an Egyptian god. Perhaps miniatures flatter our self importance. Probably Gulliver preferred being a personage in Lilliput to finding himself a droll but contemptible manikin among the Brobdingnagians. Whatever the reason, small-scale models always seem to enjoy a wide popularity, and King Edward's Hospital Fund for London has chosen a sure way of making new friends in building the miniature hospital which is now on view at 158, New Bond-street.

In this model the scale of ¾ in. to a foot has been faithfully maintained in every detail, from the bricks cleverly marked on the outside to the chromium-plated taps in the bathrooms. The plans of the hospital were prepared by the late Mr. Percy Adams, F.R.I.B.A., and after his death in 1930 the work was carried on by his partner, Mr. Lionel Pearson, F.R.I.B.A. The hospital is made on a T-shaped ground plan, and stands in its own garden; the long-arm of the T houses the wards, and ends in a rounded solarium inside which patients may be seen sun-bathing. Owing to difficulties of packing and transport, there are no separate administrative blocks, nurses' home, or laundry, such as are recognised to be part of the equipment of a modern hospital, but with this limitation the model has been made as complete as possible. The cross-bar of the T contains the matron's quarters (and the matron), the board-room, operating theatres, and kitchens. At the junction of the cross-bar with the long-arm of the T is a square clock-tower accommodating the staircase and a working model of a bed-lift, with patient, trolley-bed, nurse, and liftman all complete. On the top floor of the ward-block is the children's ward, furnished with railed cots and various diminutive toys; the walls are tiled and decorated with nursery rhyme pictures adapted from Thomas Derrick's cartoons. On the floor below is a general ward which is full of new plans for the comfort of the patient. The beds stand in cubicles which can be divided from one another by curtains strung on metal frames; and instead of jutting out into the ward in the time-honoured way, the beds are arranged on the new plan, parallel with the walls, so that the patient need not face the light directly, and, with a little management, can have his feet near the radiator instead of his head. The dual operating theatres are on the same floor as the general ward, but in the cross-bar of the T. The scale-model theatre equipment is complete and delightful; even shadowless lights have been supplied to illuminate the model operating tables, and the latest theatre windows have been fitted into the outer walls. The bottom floor of the main block is devoted to an X ray department, the equipment of which is again a triumph of delicate workmanship.

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[1] Jour. Amer. Med. Assoc., 1932, xcix., 875.

It is impossible to describe all the details of this fascinating toy—the bathrooms, sink-rooms, private wards, ward kitchens, balconies, kitchen with its elaborate cooking equipment, ambulance yard, or gardens with their sorbo trees, and two inexplicably dejected patients gazing at the fish-pond—but a final word or two must be given to the board-room. This dignified chamber is panelled in sycamore, and floored with teak; the furniture is of walnut, beautifully made, and a heavy hand-made carpet covers the floor. On the walls hang portraits of Florence Nightingale and Lord Lister, also of Lord Moynihan and Lord Dawson, painted by Mr. Alfred Praga, president of the Society of Miniaturists. The King's Fund may justly hope for their hospital the success which so much patient effort and fine craftsmanship deserves.

PATENT DUCTUS ARTERIOSUS

The fact that congenital patency of the ductus arteriosus in its typical form presents characteristic physical signs which are easily recognisable makes it possible to study this form of congenital heart disease with more confidence in the accuracy of the diagnosis than is possible in many other forms of congenital cardiac defect. Dr. D. C. Muir and Dr. J. W. Brown[1] have investigated 20 cases of this condition, 7 males and 13 females, whose ages ranged from 5 to 21. The pathognomonic physical sign, the peculiar continuous "machinery" murmur heard in the second left intercostal space close to the sternum, was present in 12 of the 20 cases, but in one was maximal in the first left interspace. The remaining 8 children presented a harsh systolic murmur maximal in the second left intercostal space, with a definite, accentuated, or reduplicated pulmonary second sound. The presence or accentuation of this sound Muir and Brown regard as important in the differentiation of this condition from that of pulmonary stenosis in which the second sound at the pulmonary area is usually reduced or absent. In no case was any cardiac enlargement detectable clinically, but 7 cases showed a band of dullness in the second and third left intercostal spaces close to the sternum (Gerhardt's dullness). The authors found radiography of considerable value in the confirmation of this abnormality. The pulmonary arc was prominent in antero-posterior radiograms in 16 of the cases, and the conclusion is reached that the radiological features of this condition are definite enough to be of value in its differentiation from other congenital cardiac defects. The striking feature of the symptoms was their rarity. Fifteen of the patients were free from complaints of any kind; 2 complained of præcordial pain, and in 1 it was definitely related to exertion. In 2 cases there was an associated neurosis, largely produced by parental anxiety consequent upon incorrect diagnosis. This illustrates the importance of recognising and differentiating this condition from more crippling cardiac disorders. Transient cyanosis was noticed with infection in 3 cases. One patient presented features of infective endocarditis. This case, together with one of Dr. C. Bruce Perry's, is reported by Dr. Brown elsewhere in our present issue, and may serve as a reminder that every patient with a congenital anomaly of the heart is a potential subject of infective endocarditis. In Muir and Brown's series it was found that the presence of a patent ductus arteriosus affected physical development hardly at all, 6 patients being of average and 9 of over average development, only 5 showing any retardation of growth. As regards incidence, it was found, contrary to the usual teaching, that patent ductus arteriosus was relatively common among congenital cardiac defects. The 20 cases described occurred in a series of 88 cases of congenital heart disease, of which they form 23 per cent. This is a higher incidence than that recorded by Perry,[2] who found 8 cases (6 per cent.) in a series of 121 school-children with congenital heart disease. But if the diagnostic criteria adopted in Muir and Brown's paper were applied to Perry's series the latter would show a higher incidence.

WAR ON THE BLOOD FLUKE

Snails which act as intermediate hosts to blood flukes of man are distributed by and multiply in the irrigation canals of Lower Egypt; these canals are in truth life and death to Egyptians. When in 1925 schemes were put into operation having as final objective the watering of three million acres of the Gezira district of the Sudan, which lies in the angle between the Blue and the White Nile, the problem which presented itself was how the benefits of irrigation could be obtained without its drawbacks in a region which examination of its inhabitants showed to be almost free from schistosomiasis. The risks of introducing it were sufficiently obvious. On the one hand, the drop in temperature in the Gezira in winter was not sufficient, as it is in Egypt, to check the reproduction of snails (nor, it may be added, of the larval stages of the blood flukes developing within them), so that within two years of their opening all the new irrigation canals were, in fact, stocked with bullinus and planorbis snails. On the other hand, immigration of persons whose urine contained living eggs of *Schistosoma hæmatobium* was very great, while the canal banks offered welcome shelter for the purposes of nature, so that miracidia, as they escaped from eggs which reached water, had ready access to their next hosts. As to the extent of the risk from immigrants, the examination of 50,000 at the quarantine stations on the White Nile showed a percentage of urinary bilharziasis varying from 8·4 to 24·4, there being little difference whether the immigrants came from Western or French Sudan in order to earn money enough to buy a wife; or were making a leisurely pilgrimage to Mecca from as far off as West Africa, with intermediate halts to earn their living. Moreover, when irrigation was established, immigration from Egypt set in on a large scale. The risk of widespread infection of the Gezira was, then, great, and the prospect of preventing it unpromising. But the problem was ably met, as is shown in a paper by R. M. Humphreys.[1] After irrigation began, and before the canals became snail-infested, a survey covering over 27,000 inhabitants displayed considerable infection, nearly all in immigrants. All infected residents were compulsorily treated till living eggs were no longer passed, as were infected persons at the quarantine stations before they were allowed to pass into the Gezira. Antimoluscan measures consisted in yearly re-excavation of a third of the 720 miles of canal with drying of the silt, a procedure fatal to these snails; while the rest of the canals were treated by a commercial carbolic fluid sufficient to produce in them a strength of 1 in 20,000, which strength was found to kill all planorbis and bullinus species. To these preventive measures was added propaganda by instruction in schools and by the issue of two pamphlets. One of them showed in simple manner the life history of the fluke, the other contained a copy of a religious decree pronounced by the Grand Mufti, the highest authority in the Sudan of the Mohammedan religion, prohibiting the fouling of water by washing, bathing, or human excrement. The result has been a very great lessening of the amount of infection. A danger threatening tens of thousands of persons has been averted by the foresight of the director of the Sudan Medical Service, Mr. O. F. H. Atkey, by the coöperation he secured with the engineers, and by the conscientiousness with which necessarily uninteresting routine measures have been carried out by the medical officers under his control.

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[1] Arch. Dis. Childhood, December, 1932, p. 291.

[2] Arch. Dis. Childhood, 1931, vi., 265.

HANS MUCH

The death of Prof. Much can hardly remain unnoticed in this country. When he died in Hamburg a few weeks ago at the age of 52 years he was still director of the Institute of Experimental Therapy at the Eppendorf Hospital whither he was called by Lenhartz in 1907 from Marburg where he was assisting Behring. During this time, as befitted a loyal disciple of Robert Koch, there were few clinical problems connected with tuberculosis which he had not investigated from the serological standpoint, but to the perplexity of his friends and still more of himself his work led him further and further into the wilds of scientific and philosophic doubt. More than in his orthodox studies his memory will survive in the name of an unspecific producer of immunity (omnadin) and in works little short of genius on Buddhism, Egyptian culture, and Low German poetry. Recently the tragic fate of his friend Deycke brought him out of retirement into a merciless attack on the Pasteur Institute and its founder. Soon after reaching Hamburg Much began his work on the acid-fastness of the tubercle bacillus. It had of course then already long been realised that the bacillus was not equally resistant to acid throughout; specimens stained by the Ziehl-Neelsen technique showed a discontinuity of acid-fastness giving the appearance of beaded forms. Much claimed that by means of his special staining there could be demonstrated in pus of tuberculous cold abscesses tubercle bacilli which were entirely non-acid-fast, while still virulent to laboratory animals. He believed there were three states in which the tubercle bacillus occurred, all of them virulent—viz., an acid-fast form, gram-positive non-acid-fast granules, and granular bacilli; and he suggested that the granular forms might represent developmental stages. Later work of other observers suggested that these granules were of a lipoid nature. Nowadays the existence of such a virulent non-acid-fast form of the tubercle bacillus is increasingly doubtful. Most observers believe, with A. S. Griffith, that if the search is sufficiently prolonged the true acid-fast bacilli can generally be found in the pus of cold abscesses which, according to Much, ought not to contain them, whilst direct cultures from such bacilli yield colonies proportionate in number to the scanty acid-fast element seen microscopically. The crux of the question appears to be one of virulence. It may well be true that acid-fastness is associated with the life-cycle of the tubercle bacillus, and is not present to the same degree throughout its whole length. But there are few who hold with Much that a completely non-acid-fast tubercle bacillus can remain virulent. Later on Much turned his attention to the separation of different antigens of the tubercle bacillus on the assumption that the organism had a number of chemically different substances to each of which the human body reacted in a particular way. These so-called partial antigens or "partigens" have been given a very considerable trial without fulfilling what Much hoped from them. They have, however, helped to pave the way for other biochemical investigations of the tubercle bacillus.

STREPTOCOCCI AND RHEUMATIC FEVER

The possible relation between streptococci and rheumatic fever has been investigated from so many angles, with so much apparent confirmation, that some authorities have practically accepted it as proven. The organism has been cultivated from the blood, from the joints, and from the throats of patients—although in this particular respect negative results are perplexingly common. Specific skin tests have been elaborated, and many workers find them convincing. E. W. Todd's[1] striking findings of specific antibodies in the serum of rheumatic patients are recent enough to be well remembered; he found that such persons have a great increase in the antistreptococcal-hæmolysin value of their serum, and his observations are being widely confirmed. New work in America[2] is now advanced as showing that agglutination tests, similar to those employed in typhoid infection, can be applied to rheumatic fever and to various forms of arthritis. Nearly 200 normal persons showed an agglutinating power markedly lower than was present in 300 cases of chronic arthritis and 66 cases of acute rheumatic fever. Only 30 per cent. of normals reacted at dilutions above 1 in 200, whereas nearly 90 per cent. of cases of acute rheumatic fever and 60 per cent.

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[1] Trans. Roy. Soc. Trop. Med. and Hyg., 1932, xxvi., 241.

[1] Todd, E. W.: Brit. Jour. Exp. Path., 1932, xiii., 248.; see The Lancet, 1932, ii., 250.

[2] Clawson, B. J., Wetherby, M., Hilbert, E. H., and Hilleboe, H. E.: Amer. Jour. of Med. Sci., December, 1932, p. 759.

of chronic cases of arthritis so reacted. Two strains of organisms were used, one "from" rheumatic fever, and the other "from" chronic arthritis. It is not more precisely stated how the strains were isolated; it is of course possible to isolate a streptococcus from any normal person. The authors of the paper say, however, that they do not believe in a specific streptococcus in these diseases; the rheumatic cases reacted with an arthritic strain, and vice versa. In fact, any student of this question will be at a loss to reconcile the divergent claims of investigators who have recognised such specific strains; and Todd's work, already quoted, presents the great difficulty that he estimates the anti-hæmolytic power of serum, although one of the few points common to investigators is that rheumatic fever strains are non-hæmolytic.

From ætiology to therapy is a natural but often fallacious step; and in streptococcal infection imagination has not yet extended beyond serum and vaccine therapy. Two of the same workers in another journal[3] have given the results of their treatment of chronic arthritis by intravenous therapy with vaccines of streptococci. They select this route because they hold that desensitisation in animals can thus be better assured, and because the agglutination titre, which they assume is a measure of immunity, is more readily raised. They claim that 74 per cent. of their cases are definitely improved; moreover, the bactericidal power of their blood was raised. They report unfavourably on the use of subcutaneous vaccines; and of intravenous typhoid vaccine injections, whose employment was sometimes followed by death. They hold that the degree of reaction to treatment is no measure of the success of the method.

The evidence of these authors, who have obviously done a considerable number of tests on animals and on man, must be taken seriously; but the whole question is still unsettled. Although many lines converge on the streptococcus, and no alternative ætiology is so well supported, there are strange incompatibilities. We find one worker obtaining over 50 per cent. of positive blood cultures and another with almost none in 400 cases. H. Warren Crowe and J. C. Small claim results as satisfactory as Clawson and his colleagues, using the very therapeutic measures they condemn. One feels that some essential factor is still awaiting discovery; and that whatever the relation of the streptococcus to rheumatic fever—and relation at least is plausible—it is more complicated than a mere host-parasite relation, such as we find in other pyogenic infections. However, intravenous vaccine therapy, as recommended by these authors, should be without danger; the doses are from 100 million to 800 million; and the organism is stated to be a rheumatic fever strain. Such strains are obtainable in England from the Lister Institute, and clinicians may consider the method worthy of a trial.

AN OPENING FOR CORONERS

UNDER the heading of the Doctor's Day on p. 108 of this issue a coroner remarks that he knows no life which is so interesting or varied as that of a London coroner; and he goes on to make the interesting revelation that as most of the London coroners are nearing the retiring age there will be plenty of vacancies in a few years. He hints too that there is at the present moment a lack of suitable applicants for the post of assistant deputy which may lead in the long run to that of a whole-time coronership. The London coroners are six in number and are appointed by the London County Council. They receive a salary of £1700 and are provided with offices and officers, the latter being police officers told off for the purpose. Each London coroner has an area which includes from three to six boroughs; he has an officer for each borough, and a number of courts, one of which serves as his headquarters. In the county of London all the coroners are whole-time officials, and they are all both doctors and barristers, although only two of them have actually practised at the bar. Outside the county of London the number of whole-time coroners in England and Wales is not great; but there are nine in the Outer Ring, and Birmingham, Manchester, and Liverpool each has its full-time official. In country districts there is not much work for a coroner, and the duties are often discharged by a solicitor who adds them to his other professional duties, and often holds his inquests in the late afternoon or evening after his other work is finished. This cannot be regarded as a permanent arrangement, and we may look forward to a time when the work will be merged into large areas, each with a whole-time coroner possessing both medical and legal knowledge It is not easy to understand how a coroner without medical qualification can cope successfully with the many highly technical medical problems with which he is confronted. The possession of medical knowledge is more important for a coroner than a legal qualification. He must be able to explain to a jury the nature of murder and manslaughter, but he need not struggle with the niceties of the law of evidence, since his inquiry ranges beyond the narrowed limits of an ordinary criminal trial. A reasonably judicial mind in the reception and weighing of evidence, fairness towards persons under suspicion, and patience and courtesy towards witnesses—these are a better equipment than deep legal knowledge.

JUVENILE RHEUMATISM IN GERMANY

A CAREFUL study of 256 cases of juvenile rheumatism, seen at the Leipzig University children's clinic between the years 1923–30, has recently been published by E. Hässler and L. Möller.[1] The clinical features are set out in great detail, the cases being divided into acute rheumatic polyarthritis (110), chorea (81), and endocarditis (65). The first impression gained from a study of these cases is that the mortality-rate is much higher than in this country; 55 children died during the period under observation, giving a rate of approximately 20 per cent. Rheumatic nodules were observed *only* in seven patients, of whom two died, so that this sign, according to English standards a manifestation of severity, was lacking in the vast majority of fatal cases. The next point of interest is the use made of the sedimentation rate. The authors regard this as the most delicate indication of the severity of the rheumatic process, and for the past three years they have carried out the test every fortnight on all their rheumatic patients. In cases where the sedimentation rate, beginning often as high as 100 mm. or more in the first hour (Westergren nomenclature), settles down to normal within a week or so the prognosis is held to be good, while a persistently high rate or exacerbations suggest a smouldering process with acute episodes such as pericarditis. The reaction is also made use of in differential diagnosis, since it is claimed that in polyarthritis due to septic conditions, including post-scarlet fever cases, or in cases with widespread pains in the limbs, as in the early stages of poliomyelitis, the sedimentation rate is normal or only slightly raised. The white blood count is also considered, the absence of gross leucocytosis or shift to the left favouring rheumatism. The occurrence of rheumatism in other members of each family was investigated. There were altogether 523 brothers or sisters in the group, and only 22, or 4·4 per cent., showed any manifestation of rheumatism. Dampness in the homes was seldom found. As regards focal sepsis, 48 per cent. of the children had suffered from tonsillitis at the beginning of their disease, while on admission 57 per cent. showed pathological alterations in the tonsils; 38 per cent. had dental caries.

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[3] Clawson, B. J.: Minnesota Med., December, 1932, p. 804; Wetherby, M.: Ibid., p. 806.

[1] Jahrb. f. Kinderh., 1932, cxxxvi., 257.

A careful follow-up was made of all but 10 of the patients. Among those who suffered from acute articular rheumatism, Hässler and Möller estimate that two-thirds of the patients completely recovered from their first attack; one-third were left with heart lesions, while 6 per cent. died. Of the cases admitted for a recurrence one-third recovered completely, one-third were left with a damaged heart, and one-third died. The chorea cases did not show the same striking differences between first and subsequent attacks. Just over half recovered completely, most of the others having damaged hearts, while there were six deaths in this series. The group with heart lesions from the onset provide a more complicated analysis which it is impossible to summarise adequately. The conclusion is reached that the fate of rheumatic children is decided usually within the first two years of the onset of symptoms. This seems a more pessimistic outlook than that generally adopted in this country. As regards treatment, tonsillectomy is not favoured, and a method of treating the tonsils with X rays does not seem to have been very successful. Salicylates were found to give variable results and were not without certain drawbacks; pyramidon is recommended as a satisfactory alternative. The opinions expressed on convalescence will depress workers in this country, where many efforts have been made of recent years to secure suitable special convalescent accommodation for rheumatic children. In this series cases kept under careful control in hospital have remained remarkably free from recurrences, while among those sent to special heart homes or ordinary convalescent homes recurrences were relatively common, so that the value of this after-treatment is held to be very doubtful.

HEALTH OF THE ROYAL AIR FORCE FOR 1931[1]

FLYING is becoming safer. In 1931 in the Royal Air Force the ratio of hours flown to accidents resulting in injury or death was greater than in any previous year. The annual report for 1931 records rather more illness this year than in the previous one, attributed to more influenza at home. The main cause of disability in the Force, however, was injury, athletics giving a small increase. The chief causes of invaliding were psychoneurosis (32) and tubercle (25); 20 were invalided for injury. Cerebro-spinal fever caused 10 deaths. When an epidemic threatens, the practice is to space the men out; barrack rooms are warmed; efforts are made to detect carriers, who are isolated for six weeks; and nasal douching and gargling are encouraged in all ranks. Of pulmonary tuberculosis 23 new cases were notified. Fresh cases of venereal disease were fewer this year; they are more frequent abroad than at home. The average number off duty from influenza was 26 men per day; from pharyngitis, 25·6; from tonsillitis, 22·4; and from gonorrhœa, 62·2. Sandfly fever was more prevalent in Iraq than in the previous year; the summer was exceptionally cool, so cases of heat exhaustion were fewer. The hospital at Hinaidi was whitened externally and so cooled, and cold ventilation contrived for the heat-stroke room. "Cold storage" of troops was achieved by arranging a summer camp away northward of Mosul. Chloramine is approved for water sterilisation; Catadyn was tried but a practical method of using it has not yet, it is said, been evolved. Casualties used to be carried in a Neil Robertson stretcher lashed to the outside of an aeroplane; they are now carried inside the fuselage, as if in a marsupial pouch, being emplaned through the bomber's opening of the aeroplane. This arrangement is said to give a much greater peace of mind to the patient. Of officers liable to fly, 95 per cent. were found fit. The chief cause for rejection of recruits was dental defect; of 2039 found fit, 106 had perfect teeth. The information given in the numerous tables dotted through the report are instructive.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 31ST, 1932

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 19 (last week 16); scarlet fever, 2033; diphtheria, 825; enteric fever, 27; acute pneumonia (primary or influenzal), 2017; puerperal fever, 26; puerperal pyrexia, 109; cerebro-spinal fever, 41; acute poliomyelitis, 7; encephalitis lethargica, 5; dysentery, 1; ophthalmia neonatorum, 79. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Jan. 3rd–4th was as follows:—Small-pox, 75 under treatment, 2 under observation (last week 63 and 0 respectively); scarlet fever, 1879; diphtheria, 1719; enteric fever, 12; measles, 259; whooping-cough, 469; puerperal fever, 25 (plus 11 babies); encephalitis lethargica, 229; poliomyelitis, 3; "other diseases," 240. At St. Margaret's Hospital there were 11 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 32 (0) from measles, 9 (3) from scarlet fever, 28 (3) from whooping-cough, 44 (19) from diphtheria, 44 (8) from diarrhœa and enteritis under two years, and 303 (25) from influenza. The figures in parentheses are those for London itself.

The fatal case of enteric fever occurred at Brighton. Measles caused 8 deaths at Birmingham, 7 at Liverpool, 4 at Leicester. Three deaths from whooping-cough were reported from Liverpool and from Sheffield. The fatal cases of influenza were reported from 61 great towns, the largest number of deaths being 92 at Birmingham, 24 at Newcastle-on-Tyne, 23 at Sunderland, 8 at Southampton, 7 at Portsmouth, 6 each at Leeds, West Hartlepool, and Walsall. In the same week Glasgow reported 86 deaths from influenza and 10 from whooping-cough.

The number of stillbirths notified during the week was 253 (corresponding to a rate of 49 per 1000 total births), including 38 in London.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—At a dinner meeting of this society to be held at the Hotel Rembrandt, Brompton-road, London, S.W., to-day, Friday, Jan. 13th, at 7.15 for 7.30 P.M., Mr. Timbrell Fisher will open a discussion on Arthritis, and Mr. Alan Todd will speak on the Orthopædic Treatment of the disease.

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[1] H.M. Stationery Office. 1931. Pp. 70. 1s. 6d.

SPECIAL ARTICLES

TUBERCULOSIS ON THE WITWATERSRAND

THE EFFECT OF MINE EMPLOYMENT UPON THE NATIVE WORKER

DURING 1925 the Transvaal Chamber of Mines had under consideration the advisability of instituting an intensive campaign against tuberculosis on the mines within its organisation. Preliminary investigation very soon proved that the problem could not be adequately investigated as a purely local one, confined merely to the native mine labourers employed temporarily upon the Witwatersrand. Not only was it essential to extend the field of inquiry to the native territories from which the labour force is recruited, but in addition many unanticipated lines of investigation proved inevitable. This led, in 1926, to the formation of a Tuberculosis Research Committee, composed, under the chairmanship of Sir Spencer Lister, of representatives of the Union Government, the South African Institute for Medical Research, and the Transvaal Chamber of Mines. The main objects of inquiry were twofold :—

(1) The extension of knowledge concerning tuberculosis as it occurs in South Africa, and more particularly in its relation to the native races : and

(2) The diminution of the morbidity and mortality from tuberculosis amongst the European and native miners in South Africa, most of whom are employed in the gold-mining industry on the Rand.

Vital statistics concerning the native populations were non-existent, the extent of their tuberculisation was unknown, the fate of those who, having developed tuberculosis during their employment on the mines, were repatriated to their distant homes was but surmised ; and of the part that these natives played in spreading the infection amongst their families and others in the kraals there was no evidence. It is obvious that the committee were faced with a very difficult but important problem of industrial and public health. The result of the many lines of investigation they instigated are coördinated in a report issued as one of the publications of the South African Institute for Medical Research.[1] Interspersed in the report is a valuable running commentary by Prof. Lyle Cummins on the evidence collected and the conclusions reached.

TUBERCULOSIS IN VIRGIN SOIL

The attention of the committee was first devoted to general considerations upon tuberculosis in virgin soil, and they summarise the work of previous investigators to establish the point that members of isolated communities exhibit a marked susceptibility to tuberculosis when brought into contact with infection, and that although the infection may be fairly well tolerated under natural or tribal conditions, it is likely to lead to fatal results when accompanied by a change in occupation, food, housing, and mode of life. A historical survey shows that little or nothing is known as to the existence of the disease amongst the Bantu tribes prior to their contact with the white races, but that there is considerable reason to believe that it must have been very rare amongst them under their primitive conditions. However, the infection had already taken a firm hold amongst them in the first half of the nineteenth century, at least in those places where the existence of military, trading, missionary, and other centres ensured close touch between Europeans and natives, and provided efficient means of recognising its existence. On the other hand, Maynard's observations in 1912 on tuberculisation (by means of Calmette's ophthalmo-reaction) suggested strongly that a large proportion of natives from Nyassa and Mozambique arrived at the Rand free from any considerable contact with tuberculosis prior to their engagement.

TUBERCULOSIS AMONG RECRUITS

This result is not supported by the large-scale investigations of the present committee. Of nearly 60,000 natives applying for engagement at the mines, 72 per cent. were found to give a positive response to a single intradermal test with one-tenth of 1 c.cm. of 1/5000 old tuberculin. Repeated tests with stronger solutions would, it is believed, probably show that 90 per cent. of the boys applying for engagement are bringing their tuberculosis with them to the extent of giving a positive response to the tuberculin test. In addition, extensive investigation in the native territories showed a high degree of tuberculisation as judged by the tuberculin test, and it is stated that the incidence of tuberculosis is higher in mine boys coming from the least tuberculised area. This suggests that the tuberculosis of the native labourers is not necessarily acquired on the mines ab initio, but that the disease may develop either through super-infection or through stress of work or other circumstances. Confirmatory evidence on this point is that amongst new recruits, with no evidence of previous mining service, dying from conditions other than tuberculosis within a few days of their arrival, there have been found a certain number of cases with definite tuberculous lesions, clear proof that some natives do arrive already infected. To be quite certain that these recruits have not had previous service at the mines is, however, admitted to be very difficult.

RESISTANCE TO INFECTION

Observation of the tuberculin-tested boys, for periods up to two and a half years after the test, showed, contrary to the evidence cited above relative to area of recruitment, that those yielding a positive reaction to this test were more likely to develop a recognisable tuberculosis than those yielding no response, the ratio of the incidence being approximately two to one. In addition, the possession of tuberculo-allergy was not associated to any useful extent with the ability to modify an after-coming tuberculosis. On the whole, therefore, it appears evident that these natives, infected during their childhood or adolescence in the kraals where tuberculosis is, according to the available evidence, now endemic, have, in many cases, developed only sufficient resistance to keep their initial lesions latent under the easy conditions of tribal life. For the new and strenuous conditions of life and work on the mines the resistance of at least a certain proportion of them is quite insufficient. In their search for causation the committee has scrutinised these conditions very closely. On recruitment there is the long and arduous journey from the territories to the Rand, the change from the warm levels of the African coast to a climate which is, at least in the winter months, very cold, dry, and dusty. Further investigation, the committee recommends, should be made into the conditions of transport. Apart from the minority that contracts or develops bacterial disease, the natives appear to benefit in health by their life in the mine compounds, for the majority gain in weight during their period of service.

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[1] Publications of the South African Institute for Medical Research, No. 30, vol. v. Tuberculosis in South African Natives, with special references to the disease amongst the mine labourers on the Witwatersrand. 1932. Pp. 429.

PROTECTIVE MEASURES

Improvements could be introduced, the committee believes, in the direction of having fewer occupants per room and better separation of the individual bunks in each room. At present, in Prof. Lyle Cummins's opinion, the conditions of housing appear calculated to facilitate the spread of influenza and other respiratory infections. The diet supplied to the native workers could be improved by the additions of vitamins A and D, in both of which it is somewhat deficient. Serious difficulties in the way of this reform lie in the conservative customs and habits of the natives and in the cost—an extra penny a day per native involves an additional expenditure of £300,000 per annum. Another problem to be considered in relation to diet is the native custom of taking food only twice daily, shortly after rising and again in the late afternoon. Such a habit may not be detrimental to health under the relatively easy life in the kraals, but it is another matter when the native is carrying out eight hours of continuous muscular work (with an average of 10½ hours in all underground), to all intents and purposes on an empty stomach. This arrangement is obviously unsatisfactory, and, the committee concludes, should be capable of being improved with advantage to all concerned. A technical problem of importance is involved in the protection of the workers, during their return from hard work in the great heat of the deep levels, from sudden changes in air temperatures and velocities, while there should be a gradual "acclimatisation" of new recruits to their work in deep mining. On all deep-level mines there does now exist a system of "entering" new boys through a series of graduated tasks, and the committee recommends that this system should be strictly adhered to and, if possible, improved.

MEDICAL CARE OF REPATRIATED NATIVES

Such are some of the conditions of life at the mines which the committee has passed under review. In addition, they point out that since the endemic tuberculosis of the native territories constitutes a danger to the mines, and the tuberculosis cases repatriated from the mines involves a danger to the territories, any comprehensive anti-tuberculosis policy must include measures not only on the Witwatersrand but also in the native territories. At present there is no organised medical service in the latter, and the majority of the subjects of the Union Government, the committee states, have no hope of medical aid beyond what they may obtain from their own witch-doctors. The absence of reliable vital statistics seriously impedes the planning of any organised campaign against tuberculosis. Investigations carried out in the territories show that faulty conditions of life and diet before coming to the mines may predispose to a danger of breakdown in health. The committee urges the appointment by the industry of a medical officer to travel in the native territories, and to be specially charged with the duty of dealing with tuberculosis among repatriated mine natives and in areas in which intensive recruiting takes place. At present a sample inquiry by Dr. Peter Allan suggests that of repatriated boys, at least 60 per cent. are dead within two years (30 per cent. of the cases were untraced, and possibly many of these had died). According to the rather slender evidence available familial spread from these repatriated cases was not a very common phenomenon, perhaps owing to the rapid termination by death. All the evidence, clinical, pathological, and statistical, shows that the new mine natives run the greatest risk, and that among them the disease is of a very acute and severe type (taken over two years' duration the fatality rate is estimated to be 70 per cent.). The "long-service" natives learn to tolerate tuberculosis to a greater extent, and may, perhaps, therefore serve as a reservoir of infection.

INCIDENCE OF TUBERCULOSIS ON THE RAND

An accurate measure of the actual incidence of tuberculosis on the Rand is an exceedingly difficult thing to attain. The labour turnover approximates, on the gold mines, 100 per cent.; the age-distribution and length of service of the workers are only approximately known. The workers are selected under a system of rigorous initial medical examinations; convalescent natives whom the mine medical officers regard as unfit for further work are repatriated. It is essential to know whether the measure is really inclusive of all tuberculosis or only of tuberculosis "under the Miners' Phthisis Act"—i.e., cases expectorating tubercle bacilli, or with closed tuberculosis of the lungs or respiratory organs to such a degree as seriously to impair working capacity and render prohibition of working underground advisable in the interests of health. These factors inevitably throw doubt upon the conclusion reached in the statistical section of the report that "many European countries and countries inhabited by European stocks have a prevalence rate of tuberculosis no lower than that obtaining among our mine natives for the same age-group." In fact, in an earlier section (p. 56) the committee concludes "that an exact weighing of the morbidity and mortality experience . . . . to enable comparison with similar experience in more settled industrial populations is impossible, and even a close approximation can hardly be arrived at on the data at present available." Further statistical returns are required (though comparability with European countries may never be possible), and for this purpose, and to ensure continuity of policy of investigations and application of suitable anti-tuberculosis measures on the mines, the committee recommends to the Chamber of Mines that a Standing Advisory Health Committee be appointed and maintained by it.

The report is a most valuable and comprehensive survey of an important problem—regarded from the economic aspect alone it costs the industry something like a million pounds annually in compensation—and the findings of the committee should certainly be followed up.

CITY OF DUBLIN SKIN AND CANCER HOSPITAL.—At the annual meeting it was stated that, in addition to the money lost directly by exclusion from the sweepstakes, the hospital has lost indirectly part of its voluntary incomes "as the inevitable tendency of the publication of the enormous amounts which have been made available for the participating hospitals has been to dry up the wells of charity." During the year there were 276 in-patients, all suffering from cancer or lupus: the out-patient department is chiefly concerned with skin diseases. The medical report expresses satisfaction with the results of the fluorescein X ray treatment and the treatment of cancer of the uterus by the combined methods of radium and deep X rays.

CONFERENCE OF EDUCATIONAL ASSOCIATIONS

IN the course of this conference which was held at University College, London, from Jan. 2nd to 9th, the Child Guidance Council arranged a lecture on

Educational Problems in a Child Guidance Clinic

Dr. WILLIAM MOODIE said that educational knowledge or teaching experience was essential for anyone who was trying to elucidate a child's problems. At the child guidance clinic relatively few children came up with the complaint of "backwardness," but on investigation 65 per cent. of all the patients showed some discrepancy between their capacities and their performance. Backwardness did not mean mental defect; a backward child was one who was not doing all he might. One great problem was the child with an intelligence quotient of 80–85 who was neither normal nor defective. The adult's attitude and the child's own attitude towards his performance were extremely important factors. Many of these children and their parents were quite content, but trouble arose when the parent tried to thrust forward a child of subnormal capacity, or when the child needed achievement for its own satisfaction. One of the advantages of the child guidance clinic was that it obtained its information about the child indirectly. The doctor who examined the child was under the disadvantage that information about the child's mental attitudes could only be obtained while the child was exercising them. The child would "give himself away" in the test situations provided by the psychological expert. Many children showed backwardness in school subjects, although intelligent enough in other ways. These displayed on examination a fundamental difficulty in discriminating form and position. Their trouble was not "word blindness" but blindness to something more basal. About the age of 11 or 12 the faculty of appreciating the symbol developed and the difficulty disappeared, but trouble then arose because at that age the child was expected to use his ability and was no longer being taught. Specific difficulties with circumscribed subjects were almost always emotional. The power of abstract thinking increased enormously round about adolescence, and emotional difficulties at that age might retard or throw back educational performance. The chief falling-off was usually in calculation.

Children were sometimes kept from school by their doctors on the pretext that they must "rest their brains," and they never got over the loss. It would be as sensible to say: "He is growing too fast; do not give him enough to eat." Later opportunities might enable the child to make up for the educational chances missed, but nothing could make up for the social education he had lost during the period at home. Children were often said to be "lazy," but was there any child who failed and liked it, or "could do better if he liked"?

In many cases, said Dr. Moodie, physical difficulties were responsible for educational trouble. Sense disturbances, such as partial blindness and partial deafness, were handicaps to education, and astoundingly difficult to identify. Many children, both defective and normal, were inattentive. These children were often fatigued; teachers realised the importance of fatigue better than doctors did. Children might live and sleep in noisy surroundings so that their sleep was always disturbed: sound, light, and vibration influences were continually assaulting them, even though they got their normal hours of sleep. Malnutrition might be the cause of educational difficulties, or the child might suffer from wrongful feeding, but on the whole it was astonishing how well London children were fed. The idea of sepsis as a cause of disorders in children was overdone; the tonsils had a useful function. The manifestations of nervous conditions, such as chorea, were often emotionally determined. Epilepsy was responsible for many difficulties, and was often not recognised.

The question must be faced whether or not society was going all wrong in the treatment of its young. All difficulties were ascribed, more or less, to repression, and punishment was said to be useless. Most of the problems of child guidance would never arise if the children had been handled differently in earlier days. The only real problem child was the child who failed to be guided as other normal children had been guided. The swing away from advice, guidance, and discipline was wrong. Probation was a temporising and hoping for the best; it was not constructive. Parents to-day did not know what to believe or to do. Educationalists had a chance of doing something; they could sit back and think, for they had not the emotional problems towards the children that parents had. A little more hard handling was indicated. Child guidance had learned enough by now to distinguish between punishment and corporal punishment, between freedom and licence, between repression and discipline. Part of the educational campaign of child guidance and educational authorities was to stress to parents their responsibility. Coöperation between teacher and parent was of the greatest importance, and more and better classification was needed, especially temperamental classification.

The Place of Punishment in Child-training

Dr. F. C. SHRUBSALL delivered a lecture to the Child Study Society on this subject. The psychiatrist, he said, might see cases whose mental trouble could be traced back to the effects of punishment, but those who dealt with delinquents saw another side of the picture: people who were brought almost to the foot of the scaffold as a result of not having the right punishment at the right time. Both points of view were right, and a balance between them must be found. In considering punishment the idea of vengeance must be excluded and the formative aspects of punishment must be considered mainly, even the reformative aspect taking second place. All parents must feel willing to join in the general confession that they had left undone those things they ought to have done, and done those things they ought not to have done. The young child, like the animal, directed its life on the pleasure-pain principle, and learnt by example far more than by precept. In primitive communities there was no didactic punishment, but unruly children doubtless met with rough handling from their outraged relatives, and their ability to stand hardship was severely tested at the period of initiation. In tribes of slightly higher culture whipping by a "devil" was supposed to free the offender from the effects of his misconduct. In one initiation ceremony the boy received three severe thrashings: the first to teach him to obey the tribe, the second to teach him to obey his father, and the third to teach him in no circumstances whatever to obey his mother. The establishment and persistence of corporal punishment in British schools was due to the two great literary influences dominant in the period of their foundation: the Greek and the Hebrew. In Sparta and Greece, boys over 7 went to boarding-school, where there was a well-developed prefectorial system, the seniors having the right to whip the juniors. In the Bible there were various passages suggesting that whipping was desirable, although when the original Hebrew was considered it was quite clear that the basic idea was one of training for the child's own good. The disappearance of corporal punishment was no doubt largely due to the greater sense of companionship between children and adults. Even the most devoted child-lover, however, was apt to admit the necessity for punishing a child that insisted on running into the road, and the argument applied equally well to other dangerous practices. A training which allowed the child to do as it liked in the hope that it would eventually choose the best would not fit it for life in the world to-day. There was probably no child psychologist in existence who, having a child of his or her own, had never spanked it.

It was difficult, he said, to see why dermal pain was regarded as so unsuitable a method of correction. It was through dermal stimuli that the young thing distinguished between the self and the non-self, and learned to avoid harmful objects. The burnt child feared the fire, and the relation between the action in touching the fire and the painful result was immediate. Only when the result was immediate could the necessary association be set up. A delayed punishment or a subsequent deprivation was to the young child either unnoticed or else just one of those inexplicable things that were constantly happening. An immediate smack set up an association which would be remembered. Punishment must be immediate and should be given in anger. The emotion of anger was quite well understood by the child, and had no ill-effects, but reasoning with it and giving it time for reflection might alarm it considerably by threatening its sense of home security. The habit of absolute obedience must be established before school age, but rebellion should be deflected rather than punished, and punishment should not be given for honest experiments. The child must learn the difference between the command that had to be obeyed and the mere suggestion; it was not fair to use the same tone for both.

The alternatives to physical pain were unsatisfactory. A tongue-lashing might inflict far more damage on the nervous system than any number of blows. At the school age it was important to reserve punishment for real offences. The important offence at this age was the offence against personal control. Nobody took it very seriously if a small boy stole apples from an orchard in the country, and the farmer's vengeance was all part of the game, but when the town child had to steal his apples from crates, a great deal more fuss was aroused. One very important thing was that the child should never believe himself immune from corporal punishment, even if that punishment was never applied.

Risks of Competitive Games and Sports

At a meeting of the Medical Officers of Schools Association the chair was taken by Dr. G. E. FRIEND, and Dr. R. COVE-SMITH opened a discussion on this subject. Sports and games, he said, were not physical exercises only but also of mental and moral value; body, mind, and spirit constituted the tripod on which the human being rested, and if one were longer or shorter than the others the whole individual would be unbalanced. Men should be trained like dancers to keep step with the rhythms of life. In practice there was a great tendency for school games to become a tyranny instead of a creative outlet and an opportunity for the liberal education of the body. Physical training was far too often in the hands of people with little or no knowledge of anatomy or physiology. The organised games of school life could profitably be replaced by fencing, camping, scoutcraft, spontaneous play, morris-dancing, and swimming. The competitive character of games tended to take away a great deal of the fun, and they became orgies of record-breaking and cup-hunting. Moreover, the competitive spirit directly tilted against the production of a satisfactory citizen, whose keyword should be "coöperation," and added an emotional to a physical strain. Whereas physical fatigue promoted sleep and recuperation, emotional fatigue prevented sleep. Further, the boy who was good at games got overtrained, and the others were neglected. It was undesirable in every way for the young child to be competitive.

Dr. J. LAMBERT said that the competitive spirit was essential in the development of character. The non-competitive game ceased to attract the boy as he grew older, and he found the competitive element a welcome break in the monotony of drill. The child under 9 was much less liable to serious injury; his bones and muscles were more elastic and he fell more lightly; also he had less determination to win, and would not run himself out in a race. Dr. Lambert produced statistics from his own experience to show the comparative rarity of injury in preparatory schools, but pointed out that when a special inquiry had been made recently only six fatal cases could be found in all the public schools in the country. Two had occurred in football, two in cricket, one in diving, and one in high jumping. The worst fractures he had seen had been due to inattention in the field at cricket. The danger in school games lay in the possibility of a tyranny being set up by a too-enthusiastic master or captain, and in unequal grouping of boys in football and boxing. The school doctor could see that this did not happen, and could also see that the boy who had a heart damaged by some infection did not over-exercise. The healthy heart was not likely to be hurt by exercise, and its reserve limit was not reached even if the boy ran himself out. The type of boy who was most likely to suffer was the older, all-round athlete who was expected to be consistently good, and who regarded an afternoon off as an unforgivable sin; he was living keyed-up all day and every day. Dr. Lambert concluded that the dissociation of the competitive spirit from games would be a retrograde step.

The CHAIRMAN agreed with Dr. Lambert on the value of the competitive spirit, but admitted that it wanted careful watching. In his experience, casualties were 50 per cent. more numerous in house games and cup-ties than in friendly games. It was very difficult to damage the heart of a schoolboy who had adequate medical supervision.

Mr. H. G. SWEENY said that the competitive spirit had been implanted by nature and could not be eliminated. Savages did not progress because they were devoted to coöperation and had no competition. The only evil was excess.

Mr. R. E. ROPER pleaded for the transfer of school sports to the autumn term, pointing out the five-fold strain upon the child of working for certificate examinations, working for prizes, working for school examinations, training for school sports, and training for swimming sports. He also pointed out that small children often preferred to play a game their own way, weaving a rich phantasy around it.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

THE HOUSING PROBLEM

WITHIN the last few years the housing problem has become somewhat complicated. The new statutes are causing some confusion. The cry for the removal of slums has somewhat blanketed the schemes for the provision of houses. Under one statute the removal of slums must proceed step by step with the provision of houses under grants calculated on the units housed. The local authorities have shown a considerable readiness to take up this compound scheme. Meantime, however, there is pressure with other methods. Private enterprise, as was to be expected, is asserting its claims. It is alleged that the local authority houses cannot be built to be let at sufficiently low rates. It remains to be seen whether private enterprise, however ingenious the financial arrangements, will be able to do any better. Meanwhile, compared with the earlier output of houses, the numbers have fallen off considerably. Nevertheless, the annual average from 1919 onwards has kept round about 12,000 to 13,000 a year. It is quite certain that more houses are still needed; but there will be a mixed fight in the methods of providing them. The recent change in the rate of interest has stirred up the building societies, and it is supposed that the new financial schemes will end in houses of cheaper rents. Cheaper rents are, of course, a necessity; but I am sceptical of the new methods of securing them.

WORK OF A MENTAL HOSPITAL

In the annual report of the Stirling Mental Hospital it is stated that the general quietness and orderliness in the lives of the patients is largely due to the successful efforts made in finding suitable occupations for them and so maintaining an interest in their surroundings. The methods followed have long been familiar in the Bangour Mental Hospital of the city of Edinburgh. The superintendent finds the predominant interest of the patient and sets him to appropriate work. The difference between patients managed on those lines and by the old methods of confinement can be realised only by direct inspection. Of 150 patients discharged, 98 were discharged recovered, giving a recovery-rate, calculated on the number of admission, of 37·1 for both sexes; 62 patients had recovered within six months of admission and 22 after twelve months. One man was discharged recovered who had been resident in the hospital for seven years.

A complaint made is that the institutions primarily for the treatment of mental ailments should have their hospital departments crowded out with senile cases. These could be satisfactorily cared for in some more suitable way, and it seems unfair that those old people should be certified as insane and detained under a sheriff's warrant. Most of them could be readily dealt with by utilising some of the spare accommodation in the poor-houses throughout the country, the only additional requirement being a few nurses to look after them. This problem, no doubt, will ultimately find a solution as the consolidation of institutions under the new authorities proceeds.

EDINBURGH MUNICIPAL HOSPITALS

I learn that the problem of the municipal provision of hospitals is in process of being solved satisfactorily. The difficulties of medical staffing of the hospitals seem to have been got over.

IRELAND

(FROM OUR OWN CORRESPONDENT)

MEDICAL MEN AND THE IRISH ELECTIONS

ALTHOUGH the list of candidates is not complete at the moment of writing, it looks as if medical men would be more prominent in the elections now to take place—and, one may hope, in the new Dáil—than they have in the past. For the city of Dublin there were in the last Dáil three medical deputies—Mr. T. Hennessy and Dr. Myles Keogh, both Cumann-na-n Gaedheal, and Dr. J. B. Lynch, Fianna Fail. All are again going forward. Sir James Craig is certain of re-election unopposed for Dublin University. Two members of Mr. de Valera's Government, Dr. James Ryan, Minister for Agriculture, and Dr. C. Ward, Parliamentary Secretary to the Minister for Local Government and Public Health, have again been selected as candidates for their respective constituencies, County Wexford and County Monaghan. Dr. R. E. Davitt is to contest Meath as a supporter of Mr. Cosgrave. Dr. Vincent White is again a candidate for Waterford, and Dr. Edward Dundon has been selected as a candidate for Kilkenny and Carlow, both in the Cumann-na-nGaedheal interest. On the same side Dr. T. F. O'Higgins and Dr. P. Doyle are candidates in Leix and Offaly (Queen's and King's Counties).

AUSTRALASIA

(FROM OUR OWN CORRESPONDENT)

POST-OPERATIVE TETANUS

TETANUS developed in two cases recently operated on consecutively at the Wollongong Hospital, New South Wales. Both patients, who lived in adjoining houses, were operated on for removal of the appendix by the same surgeon, and both died. An inquest was held, and after a thorough investigation of the catgut used, the coroner held that it was responsible for the tetanus. The catgut was stated to have been of German origin.

Within the past week a further case of post-operative tetanus has developed in South Sydney Hospital, Sydney. The catgut used on this occasion was the same as that used at Wollongong. The Minister for Public Health, on the advice of the government microbiologist, has sent a communication to all hospitals in New South Wales, stating the brand of the catgut used. He suggests that all available supplies of this catgut should be discarded and further, that for the future only catgut of British origin should be employed.

POST-GRADUATE TEACHING

Post-graduate work in New South Wales was carried out in a desultory manner until several years ago, when the New South Wales branch of the British Medical Association undertook to put the organisation of post-graduate work on a more satisfactory footing, by appointing a committee to develop it. The branch has now disbanded its own committee, and has founded a permanent post-graduate committee, on similar lines to the committee which for some years has carried out very satisfactory programmes of post-graduate work in Melbourne. The new New South Wales committee, which is representative of Sydney University and the eight larger metropolitan hospitals, has already begun work.

AIR TRANSPORT OF PATIENTS

Transport of the sick by aeroplane is becoming a regular feature of the Australian outback, and in Queensland a regular aeroplane medical service has long been in operation. It is almost a common thing for a specialist to travel 400 or 500 miles by aeroplane, and recently a Sydney doctor travelled 1400 miles by aeroplane to Mount Isa to attend a sick woman. The longest of these journeys was probably in 1930, when a Quantas, Limited, aeroplane was engaged by the Australian Inland Mission to bring a patient from Port Darwin to Sydney, a distance of nearly 2000 miles.

MEDICINE AND THE LAW

Rejection of Finger-print Identification

SCIENTIFIC research may equip Scotland Yard with methods for the detection and conviction of a criminal, but a British jury cannot be compelled to accept them. The system of identification by finger-prints is an example. The work of Dr. Henry Faulds, Sir Francis Galton, and Sir William Herschel, established its value; Sir Edward Henry thoroughly tested its applicability for criminological purposes; yet the application remains haphazard. However useful to the police in the narrowing of the field of detective investigation, the system is still an uncertain weapon for a prosecution to rely upon exclusively. In R. *v.* Chadwick, 25 years ago, where it was a question of convicting a burglar by the evidence of finger-prints left upon a champagne bottle, the judge warned a Birmingham jury that it would not be safe to accept such evidence as a basis for conviction; the jury nevertheless found the accused guilty. A converse situation was reported lately from Brighton quarter sessions. A Brighton office had been broken into; pieces of glass found in a waste-paper basket in the office were carefully taken out by a charwoman, wrapped in a duster, and given to the police. A Scotland Yard detective-inspector stated in the witness-box that he was positive the finger-prints on the glass were those of the accused; he had never known the impressions of two persons' finger-prints to be alike. The Recorder explained to the jury the significance of this identification but the jury rejected it. Scientific research may be decisive as to the finger-print system; popular opinion may still disregard it.

On Monday last, the centenary of Herschel's birth, the *Times* published an interesting account of the official development of the finger-print system, written by Sir John Moylan, who explains the significance of Mr. Battley's new method of using single finger-prints. The article may be said, with all respect to the Brighton court, to carry conviction.

Identification from Photographs

If judges or juries look with suspicion upon the unfamiliar, they may go to the other extreme where the operation of some scientific process is well established. Thus photography is readily accepted in the law courts in spite of its technical limitations (in the matter, for instance, of perspective) and in spite of the fact that the individual use of its results may be fallacious. The police force preserves photographic records of criminals and employs them where the author of a crime is undiscovered. Suppose that a burglary has been committed and that the butler, who says he saw a man running away from the house, is shown a series of photographs by the police and is asked if he can pick out the man he saw. Suppose that, after prolonged study of the photographs of A, B, C, and D, the butler says that the photograph of A is very like the wanted man. If the butler afterwards picks out A at an identification parade or identifies him in the witness-box at the trial, there is a real danger that he will be identifying A from his recollection of the photograph of A rather than from his recollection of the man seen running away from the house. This point was taken last year in the Court of Criminal Appeal in R. *v.* Hinds, a case where the main issue was that of identity. The appellant's counsel asked the Court to upset the conviction on the ground that the judge at trial had not specially warned the jury that the value of identification by a witness might be lessened by the fact that the witness had previously picked out the photograph of the accused from a series of photographs displayed to him by the police. The Court of Criminal Appeal, however, dismissed the appeal and held that no such warning was necessary.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Capt. T. W. Jeffery, retd., to be Medical Officer for the R.N. Armament Depôt, Lodge Hill and Upnor, vice the late Surg. Capt. W. G. K. Barnes, and Surg. Capt. J. J. H. Rooney, retd., to be Medical Officer for the R.N. Torpedo Factory, Greenock, and Admiralty Surgeon and Agent for Greenock, vice Surg. Comdr. F. D. Lamley.

Surg. Lt. E. R. P. Williams to be Surg. Lt.-Comdr.

Surg. Lt. (D) H. E. Rose to be Surg. Lt.-Comdr. (D).

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Capt. R. J. Willan, K.H.S., is placed on the retd. list.

Surg. Sub-Lt. G. H. C. R. Critten, to *Royal Oak*.

ROYAL ARMY MEDICAL CORPS

Majs. M. J. Williamson and A. D. Stirling to be Bt. Lt.-Cols.

Capt. S. G. M. Lynch, from R.A.M.C., T.A., to be Lt. (on prob.).

Lt. N. H. Lindsay to be Capt. (prov.).

Lt. (on prob.) H. C. M. Walton is restd. to the estabt.

Lt. W. B. Williams and Lt. (on prob.) M. Fallon resign their commns.

TERRITORIAL ARMY

Maj. A. S. Hebblethwaite to be Bt. Lt.-Col.

Capt. J. E. McCartney (late R.A.M.C.). to be Capt.

J. H. Taylor (late Cadet Lce.-Corpl. Glasgow Univ. Contgt., Sen. Div., O.T.C.) to be Lt.

A. G. W. Whitfield (late Cadet Corpl. Wellingborough Sch. Contgt., Jun. Div.. O.T.C.) to be Lt.

INDIAN MEDICAL SERVICE

Lt.-Col. M. R. C. MacWatters retires.

COLONIAL MEDICAL SERVICES

Dr. H. S. Lawrence has been appointed Medical Officer of Health, Jamaica, and Dr. T. W. Ware has been promoted Health Officer, Hong-Kong.

Surg. Capt. J. B. Ronaldson, R.N.V.R., has been appointed an Honorary Physician to the King in place of Surg. Capt. R. J. Willan, R.N.V.R., who has retired.

KING EDWARD'S HOSPITAL FUND FOR LONDON.—Amongst the latest contributions to this fund is the sum of £1000, being the annual subscription of H.M. the King.

AN INVESTIGATION OF THE MENOPAUSE IN ONE THOUSAND WOMEN

IN October, 1926, a subcommittee was appointed by the Council of the Medical Women's Federation *for the purpose of investigating, from the clinical* aspect, phenomena associated with the menopause. The data on which this report, which is here published in full, is based were collected on 1220 questionnaire forms, each of which was filled in by a medical woman as the result of a personal interview with the individual from whom the information was obtained. The inquiry referred to women in whom five years or more had elapsed since the cessation of the menses. Their ages, when interviewed, varied from 29 to 91.

The Report

In order that the source of the data should include women of normal health and in all conditions of life, the subjects of the questionnaire were, as far as possible, other than patients. They included married and single women of various social status, leading an ordinary home life, women engaged in or retired from the various professions, intellectual and manual occupations and domestic work. They lived in cities, industrial areas, and rural districts in various parts of England and Scotland. Many of them were in public assistance institutions in different parts of the country. Apart from the advantage of the ease with which large numbers could be thus approached, it was thought that they would represent a good average of health in view of the fact that their presence in these institutions was determined by matters of finance, or accident, or death of relations, rather than by their own health.

Our inquiry was spread over a period of five years, and when completed the 1220 questionnaire forms were sent to a statistician, Mr. W. T. Russell, who compiled many tables of figures and wrote a full *analytical report, which is quoted freely in the* following paragraphs. We are greatly indebted to Mr. Russell for this work, without which the real values of our material could not have been obtained. He found 1197 of the schedules sufficiently complete *for use in the investigation; 835 of these referred* to married, and 362 to single women. Here, in order to reduce the quotation of figures to a minimum, percentages only are given and they are, as far as possible, incorporated in the text, which deals with *the main points of general interest emerging from* the investigation. These are considered under the following headings:—

1. The proportion of women free from menopausal symptoms.
2. The frequency of t[illegible]oms: *flushing*, hæmorrhage, giddiness, [illegible]stability, pain in breasts, "rheumatic" [illegible] thyroid gland, obesity.
3. Incapacity due to the menopause.
4. Age of onset and cessation of the menses.
5. *The effect of the following factors on the prevalence of* symptoms and age at the menopause: age of onset of the catamenia, miscarriage and childbearing, menstrual history, previous health.
6. Comparison of the points mentioned above in married and unmarried women.

THE PROPORTION OF WOMEN FREE FROM MENOPAUSAL SYMPTOMS

Of the total number of women questioned, 15·8 per cent. stated that they had passed through the menopause without any symptoms. The frequency in the case of single women was 20·4 per cent. and of married women 13·8 per cent., a difference of 6·6 per cent., which, when tested against the usual criteria for statistical significance is of importance and is not due to chance.

SYMPTOMS ASSOCIATED WITH THE MENOPAUSE

(*a*) *Flushing.*—Of all the symptoms associated with the menopause, flushing was the most frequent. It occurred in 62·3 per cent. of the total number, and in 4·8 per cent. of these cases it was the only symptom noticed. The intensity of the flushing varied very much. In some it was barely perceptible, others complained of severe "heats" accompanied by sweating many times during the day and night. Many of the women regarded the inconvenience of flushing a trivial matter compared with the discomfort they had suffered from blushing in their youth. Others considered it the most serious and weakening of the symptoms associated with the menopause. The duration of the flushing period was also very varied. In the majority it occurred on and off for a period of about two years, in many cases it lasted five to ten years, while a considerable number, even some in their seventies and eighties, said that they had never been entirely free from flushing since the change of life. It was a common experience for the flushing to occur or to be more marked during a state of fatigue or of debility after an illness.

TABLE I.—*Showing frequency of symptoms*

—	Percentage frequency amongst—		
	Total women.	Married women.	Single women.
No symptoms	15·8	13·8	20·4
Flushing	62·3	64·8	59·1
Hæmorrhage	20·9	22·6	17·1
Giddiness	39·7	42·3	34·3
Headache	44·6	45·9	41·7
Nervous instability ..	30·9	30·4	32 0
Pain in breasts	6·3	6·7	5 0
"Rheumatic" pains ..	23·7	24·9	21·0
Change in thyroid.. ..	2·0	1·8	2 5
Miscellaneous	1·3	1·1	1·9
Obesity	34·2	39·4	22·7

(*b*) *Other symptoms.*—Of the other symptoms inquired into it must be explained that under the heading "rheumatic" pains are grouped cases of arthritis and fibrositis, it being found impossible to *differentiate between these conditions in many of the* histories obtained. The term hæmorrhage was used for all cases in which excessive uterine loss was noted, either on one or more occasions or extending over several periods.

As will be seen in Table I., flushing, headache, giddiness, obesity, and nervous instability were in numerical order the most frequent among the married women. The sequence in the case of single women was flushing, headache, giddiness, nervous instability, and obesity. "Rheumatic" pains and hæmorrhage were next in frequency in both groups, and pains in the breast and changes in the thyroid were at the lower end of the scale. Greater frequency, in varying degrees, was shown, in the case of married women, of all the following symptoms: flushing, headache, giddiness, "rheumatic" pains, hæmorrhage, pains in the breast, and obesity. In the last-mentioned, the relative disparity was very marked, the percentage value *for single women being only 57 per cent. of that* found for married women. On the other hand, there was a slight excess (5 per cent.) in the proportion of nervous instability amongst single as compared with married women, and, although the actual number of thyroid changes was very small in the two groups, the proportion among the single was 30 per cent. greater than that among the married.

INCAPACITY DUE TO THE MENOPAUSE

Under the heading "incapacitated" were grouped all the women who, on account of some disturbance of health attributed to the menopause, were obliged to lie up or absent themselves from their work on one only or on more occasions. The proportion was 10·3 per cent. In this there was little difference between the married and single women, the percentage being 10·9 and 9·1 respectively.

In view of the general impression acquired from the literature on the subject, it was somewhat surprising to find that approximately 900 out of 1000 unselected women stated that they had carried on their daily routine without a single interruption due to menopausal symptoms. In support of these assertions, it may be added that one of the difficulties in collecting data for the investigation from other than patients has been the uncertainty of heads of departments in business houses as to which of the women employed should be questioned, since in so many over 50 years of age no signs of having passed the "change of life" had been detected. A similar problem was experienced in approaching women of all classes, who, in daily contact with others, had revealed no menopausal disturbance, such as irritability of temper commonly thought to be inseparable from this phase of a woman's life.

AGE OF ONSET AND CESSATION OF MENSES

In questioning a number of women, most of whom were over 50, it may be surmised that it was not possible to get accurate information of events and sensations which had occurred over 35 years previously. It was, however, found that, even in the very old women, recollection as to the age of onset and the early experiences of menstruation were firmly fixed. It was not at all uncommon for the exact date and day of the week of the first occurrence of menstrual discharge to be remembered. This was not so with regard to details concerning the "change of life." Several were unable to state their exact age at the last period, even if only five years previously, though the large majority could give definite information as to age and symptoms.

It was found that the ages of onset of menstruation ranged from 9 to 21 years. In the age-group 13–15 years, inclusive, 55 per cent. of the total observations were located. In approximately 13 per cent. of the whole series, the menstrual periods did not begin until after the age of 17 years. The age of the last period ranged from 23–60 years, excluding one who stated that she continued to menstruate regularly until she was 66, and another until she was 73. Cases of artificially induced menopause were not included. The proportion of women who had their last period before reaching their 40th year was 8 per cent. In the ensuing five years, 22·5 per cent. reached their menopause, and between 45 and 55 years 64·7 per cent. of the total cases occurred. At the age of 55 and upwards, the proportion fell to less than 5 per cent. The maximum frequency for both single and married women occurred at 50 years. But the marked excess in this age-group, followed by the marked defect in age-group 51, as seen in Table II., is in part due to the tendency for women whose memories were not accurate to state their age in "round figures." A similar tendency is exhibited around the ages 40 and 45.

TABLE II.—*Showing the age-incidence in individual years of those women who had their menopause between the 38th and 52nd year*

Age in years.	Married	Single.	Total women.	Age in years.	Married	Single.	Total women.
38	13	3	16	46	48	19	67
39	12	2	14	47	39	18	57
40	63	29	92	48	61	30	91
41	26	9	35	49	56	23	79
42	38	11	49	50	114	53	167
43	39	16	55	51	26	16	42
44	21	7	28	52	55	23	78
45	71	25	96	(38–52) Total.	682	284	966

The next questions considered were the possibility of any inter-relation between the ages of onset and cessation of the menses, also whether the age of menopause was affected by childbearing. By various methods of calculation and correlation, it was proved that there was no relationship exhibited in the data between the menstrual and menopausal ages of either married or single women. When menstruation began at 13, the mean age of cessation was 47·3; when it began at 18, it was 47·5. Although the mean age at menopause declines for menstrual ages over 19, not much importance can be attached to the decrease, as the values are based on small numbers. It was also found, by statistical analysis, that childbearing exerted no influence whatever on the age at the menopause. It was noted, however, in taking the histories, that a considerable number of women stated that they had not menstruated since their last confinement, although this was definitely earlier in some cases than the usual menopause age.

EFFECT OF CERTAIN FACTORS ON THE PREVALENCE OF SYMPTOMS

(*a*) *Age at the last period.*—In most instances there was little evidence that age was an influential factor in the occurrence of symptoms. There were, however, certain exceptions. The proportion of the cases of hæmorrhage increased with the age. On the other hand, there was a suggestion that obesity declined with the age.

(*b*) *Number of miscarriages.*—Among women who had had no miscarriage there was a tendency for the occurrence of menopausal symptoms to be relatively less than amongst women who had had miscarriages, especially with regard to pains in the breast, "rheumatic" pains, and obesity, but there was little evidence that an increase in the number of miscarriages accentuated the prevalence of symptoms.

(*c*) *Number of pregnancies.*—There was a tendency for the individual symptoms to be relatively more frequent amongst women who had conceived. There is, however, no substantial evidence to show that the proportion of symptoms increased with the number of conceptions, except in the group of women who had ten or more pregnancies. Amongst the 837 married women, 15·5 per cent. were never pregnant, 38·5 per cent. had 1–3 pregnancies, 7·4 per cent. had ten or more. In the last group, in which the proportion of symptoms was significantly higher, were included—

6 women who had 14 pregnancies.
5 ,, ,, ,, 15 ,,
2 ,, ,, ,, 16 ,,
1 ,, ,, ,, 17 ,,

There was, however, one symptom—namely, nervous instability—which was unaffected by pregnancy in the data. The prevalence of this symptom was just as high amongst the nullipara as amongst those who had had many children. In all probability it was a condition which prevailed among a class of women long before the menopausal age was reached

RELATIONSHIP BETWEEN MENSTRUAL AND MENOPAUSAL SYMPTOMS

In previous paragraphs we discussed the relationship between the menstrual and the menopausal ages, and found that for all practical purposes they were unrelated—a knowledge of the one being of little use in predicting the onset of the other. These two physiological phases were then considered from another aspect. Is a woman who suffered from dysmenorrhœa more likely to suffer from symptoms during the menopause than a woman in whom menstruation was normal? To answer this question, the menstrual and menopausal data were sorted into categories. as shown in Table III.

TABLE III

Menstruation.	Married menopause.			Single menopause.			All women menopause.		
	N.	S.	Total	N.	S.	Total	N.	S.	Total
Normal	193	106	299	76	22	98	269	128	397
Severe ..	201	268	469	106	114	220	307	382	689
Total ..	394	374	768	182	136	318	576	510	1086

N. =normal; S. =severe.

It will be observed that the proportion of normal menstruation with severe menopause in married women was 106/299 (35·45 per cent.); in single women, 22/98 (22·45 per cent.); and among all women, 128/397 (32·24 per cent.). The proportion of severe menstruation with severe menopause in married women was 268/469 (57·14 per cent.); in single women, 114/220 (51·82 per cent.); and among all women, 382/689 (55·42 per cent.).

The differences between these values—35·45 per cent. and 57·14 per cent. for married; 22·45 per cent. and 51·82 per cent. for the single; 32·24 per cent. and 53·42 per cent. for all women—are greater than those which are likely to arise by mere chance. Hence we conclude that according to these data there is some evidence that a normal menstruation tends to be followed by a normal menopause and vice versa, and that the association is slightly more defined amongst single women than married women.

It must be borne in mind that the majority of women from whom these figures were obtained, being over 55, had not so much opportunity for healthy development open to them as have girls of the present day. 57·5 per cent. of them were troubled with some menstrual disability, whereas the proportion of cases of dysmenorrhœa amongst young women is now much smaller. If then a normal menstruation is found to be associated with a symptomless menopause, there may be reason to hope that in the future there will be less disturbance of health at the "change of life."

PREVIOUS HEALTH AND MENOPAUSAL SYMPTOMS

Notes as to previous health were made in the schedules for the purpose of examining whether this factor influenced in any way the type of menopausal symptoms. In many cases the histories were indefinite, and the value of statements regarding past illnesses were difficult to assess. It was interesting to note, for instance, the importance attached to "heart trouble" by some who had reached a ripe old age. Several of the old women, including one in her 90th year complained that they had "always suffered from a weak heart," though their health had been otherwise good—no credit being allowed to the maligned organ for the fact that it still continued to beat. The records of previous health were, however, classified under "good," "fair," and "bad," and when the necessary calculations were made from this crude basis, it was found that there was only a small degree of relationship between the previous health and the type of menopausal symptoms, the coefficient of contingency being 0·203 for married and 0·137 for single women.

SUMMARY

From the analysis of the data the following points emerge:—

1. The proportion of women who carried on their usual occupation *without any interruption* due to symptoms attributed to the menopause was 89·7 per cent., the difference between the married and unmarried groups being insignificant.

2. The percentage of women free from all menopausal symptoms was 15·8. The percentage of women relatively free, flushing being the only symptom, was 20·6. The proportion in each case was greater in single than in married women.

3. Greater frequency in the following symptoms were found amongst married women: flushing, headache, giddiness, "rheumatic" pains, hæmorrhage, pains in the breast, and, markedly so, obesity. In nervous instability and change in the thyroid, the larger proportion was amongst the unmarried.

4. There was little or no correlation between the age of onset of menstruation and the age at the last period for either married or single women. Notwithstanding that a considerable number of women stated that the menses had not recurred after the last confinement—which was, in some cases, definitely earlier than the usual menopause age—the analysis showed that childbearing, even when allowance was made for age at marriage, in no way influenced the age at the menopause.

5. There was some evidence that normal menstruation tended to be followed by a normal menopause, and a history of dysmenorrhœa by more marked menopausal symptoms. This was slightly more defined for single than married women.

6. Previous health was a factor of no marked importance in influencing the onset or severity of menopausal symptoms.

The members of the subcommittee who presented the above report to the Council of the Medical Women's Federation were as follows: Lady Barrett, M.S. (chairman), Prof. Winifred Cullis, D.Sc., Dr. Letitia Fairfield, London; Miss Ruth Nicholson, M.S., Liverpool; Dr. Mona Macnaughton, Newcastle-on-Tyne; Dr. Cecilia F. Williamson, Ipswich; and Dr. Alice E. Sanderson Clow (hon. sec.), Cheltenham.

THE DOCTOR'S DAY

"Come, tell me how you live," I cried,
"And what it is you do!"

X.—THE CORONER

THE principal duty of a coroner is to investigate all sudden deaths of unknown cause, deaths from violence of all kinds, and all unnatural deaths—e.g., deaths from poison, anæsthetics, alcoholism, or industrial diseases. Most of the deaths requiring investigation are reported to the police station or to the coroner's office, and the coroner's officer of the borough in which the death took place then makes his inquiry and presents a written report each day to the coroner. The perusal of all these reports is the first daily duty of the coroner, and he then decides whether an inquest will be necessary, or whether the doctor can properly and safely certify the cause of death, or whether a post-mortem examination would be likely to clear up the doubt and so avoid the necessity for an inquest. If he decides that an inquest ought to be held, then he fixes the time, directs what witnesses should be summoned, orders the removal of the body to the mortuary, orders a post-mortem examination, if required, says who is to make it, and issues his warrant for the summoning of a jury when necessary—e.g., a street fatality, or a death from a factory accident. In factory cases notification is sent to the factory inspector of the time of the inquest, and if there is suspicion that the case may be one of murder or manslaughter then the coroner informs the Criminal Investigation Department at New Scotland Yard, and inquiries are set on foot by them.

Roughly about half of the cases reported to the coroner can be dealt with under the Act of 1926 by ordering a post-mortem examination, usually by an expert pathologist; if this reveals a natural death, then the case can be so certified by the coroner and no inquest will be required. Other cases requiring his attention are those where a death has occurred rather suddenly and unexpectedly, and, although there may not be any suspicion that the death is other than a natural one, yet the doctor may feel it his duty to inform the coroner of the death. A little inquiry will often clear up such a case, and will enable the coroner to authorise the doctor to issue a certificate of death. Then there is now an Act which requires all deaths of persons whose bodies it is sought to remove out of England to be reported to the coroner; a consideration of the death certificate and the general circumstances surrounding the death will generally satisfy the coroner that there is no need to hold an inquest.

INQUESTS AND JURIES

Having thus cleared his table the coroner will proceed to dispose of his daily list of inquests. He may have as many as 1500 cases reported to him in a year, and he will probably hold not far short of 800 inquests. Fortunately, a good many of these an be held without a jury. or he would find it mpossible to get through. All deaths from street ccidents. all factory deaths. and, of course. all ases of murder and manslaughter require juries: n such cases there are generally counsel or solicitors. or both. and the proceedings are accordingly considerably lengthened. After the relevant witnesses have been examined and cross-examined. the coroner sums up, explains to the jury the law. generally of negligence. marshals the facts proved in evidence. directs their attention to inconsistencies and improbabilities and contradictions, and their effect upon the weight of evidence. asks the jury to decide upon the facts which they accept as the correct ones. to apply the law to those proved and accepted facts. and to return a verdict upon them accordingly. After the verdict the inquisition is signed. the fees are paid. and the court is closed.

Very rarely there is a verdict of murder or manslaughter, and in these cases the coroner has to read over the depositions to each witness. sign them and get them signed by him: he has to issue his warrant for the arrest of the accused and for his committal to prison to await trial: to give bail in case of manslaughter if he so decides: to bind over the witnesses to give evidence at the Old Bailey: and. finally. to get the formal inquisition signed by the jury. Such committals are now very few. for. under the Act of 1926. where a person has been charged before a magistrate with these offences the coroner adjourns his inquest until the termination of the criminal proceedings. From time to time, however, the coroner has cases in which. although there is suspicion. it is not sufficient to justify the police in making an arrest. and he has to deal with the matter at length. Criminal abortions belong to this class and are most unsatisfactory and difficult. for there is generally a conspiracy of silence and deceit. I believe there is a large number of these cases in London at present, but few of them come before us. When they do come they are so veiled in secrecy and so cleverly camouflaged that it is seldom possible to bring the crime home to the perpetrator. The incriminating evidence consists. as a rule. of statements made by the deceased person or by an accomplice which cannot well be admitted in such a serious charge.

DIFFICULT CASES

Complicated street smashes. where two or more vehicles are involved. present great difficulty to the coroner. Obscure cases of food poisoning. unexplained fatal fires. mysterious explosions. house collapses. flood fatalities. all kinds of factory accidents. river collisions. suicides. and scores of other problems present themselves for solution in the course of the year. All. or very nearly all. can be solved by close attention, by expert assistance. and by adjournments and continuous investigation. In cases of great public importance in London the L.C.C. will always give the coroner every assistance he may require in the matter of engaging and paying technical experts to investigate really difficult problems; thus the coroner's court may find itself listening to great engineers. architects. chemists. metallurgists. fire experts, flying experts. explosives experts, building research workers, ventilation engineers. or railway signal technicians. The viewing of the locus in quo enables him to understand what would otherwise be almost unintelligible. In certain cases of sudden death the autopsy may fail to reveal a definite cause of death; while some coronary disease or heart disease may be present. it is well within the bounds of possibility that these are not the real cause of death. Careful inquiry into the clinical history, and the absence of all signs or symptoms of poison may enable the coroner to pass the case. but it is as well. when in doubt. to exclude poisoning by ordering an analysis. In London this is easy, for we are empowered to engage and pay analysts when we feel it desirable to have a chemical or bacteriological analysis performed. It will be remembered that in the Seddon case. the Armstrong case, the Greenwood case. the Duff case. and the earlier Pritchard case medical certificates of natural deaths were given by medical practitioners. but subsequent analyses showed arsenic to be the cause of death in all these cases—a rather disturbing reflection. I look upon all sudden and unexpected deaths as suspicious if there is a history of vomiting and diarrhœa. and I take steps to avoid being led astray by such vague certificates of the cause of death as gastritis. Then. again. one must be watchful for deaths which appear to be due to cerebral hæmorrhage but which may be due to narcotic drugs.

Suicides and street fatalities provide us with the bulk of our cases for inquest. and when the suicide uses the now fashionable gas oven they are simple enough. Farewell letters in the writing of the deceased are a blessing to the busy coroner in suicides. but where the death took place as the result of a fall from a window. and no writing is left by the deceased. and there is an astute solicitor or counsel. the case may not be quite so easy. A diligent search by an experienced coroner's officer will often disclose some document which throws a light upon the cause of death: it is surprising how often such papers are overlooked. Finger-marks in the room and particularly on the window-sill now and then enable us to arrive at a conclusion.

NO LIFE SO INTERESTING OR VARIED

After a pretty long experience of life. and a considerable acquaintance with people engaged in all kinds of professions and businesses. I know of no life which is so interesting and so varied as that of a London coroner. The chief charm of the life lies in its complete independence. So long as you conduct your duties with efficiency no one can interfere with you. The Lord Chancellor can remove you from office. but only for incompetence or actual misconduct. and I have never heard of this power having been exercised. You arrange the work to suit public convenience and. subject to that. to suit yourself. One day it may be very heavy. but the next may be free. The work is always lightest when the weather is at its best. heaviest when the gloom and cold of winter render work preferable to leisure. If after months of continuous work you feel stale and weary of tragedies you can take a holiday without asking anyone's permission. All you have to do is to hand over the duties to your deputy, pay him his fee. and go away. Coroners who were appointed after the passing of the Act of 1926 must retire at 65 years of age. but in London they then receive a (maximum) pension of nearly £1000 a year, which, being non-contributory. is adequate. As regards prospects. we in London are most of us rapidly approaching the retiring age. so there will be plenty of vacancies in a few years. and I know that some of my colleagues are without assistant deputies because they cannot find suitable men.

The newly qualified medical man who is desirous of becoming a coroner may wonder how to solve the problem of earning his living as a doctor and getting called to the bar at the same time. But the bar examinations. though difficult and at times dull. are far easier than those of the medical student. Tuition courses can be carried on by correspondence, the eating of *dinners in Hall* is just a pleasant formality. and a call to the bar should be within the reach of the average doctor within a couple of years. If in practice in London he can pick up the routine work of a coroner by attending his inquests for a few weeks or months: once that knowledge is acquired an assistant deputyship. followed by a deputyship. should be obtainable in due course. The deputy takes the place of the coroner during his absence. through illness or other cause. such as holidays. and it is quite easy to carry on a practice at the bar. or in medicine, whilst holding one of these appointments and waiting for full coronership.

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The differences between these values—35·45 per cent. and 57·14 per cent. for married; 22·45 per cent. and 51·82 per cent. for the single; 32·24 per cent. and 53·42 per cent. for all women—are greater than those which are likely to arise by mere chance. Hence we conclude that according to these data there is some evidence that a normal menstruation tends to be followed by a normal menopause and vice versa, and that the association is slightly more defined amongst single women than married women.

It must be borne in mind that the majority of women from whom these figures were obtained, being over 55, had *not so much opportunity for healthy development* open to them as have girls of the present day. 57·5 per cent. of them were troubled with some menstrual disability, whereas the proportion of cases of dysmenorrhœa amongst young women is now much smaller. If then a normal menstruation is found to be associated with a symptomless menopause, there may be reason to hope that in the future there will be less disturbance of health at the "change of life."

PREVIOUS HEALTH AND MENOPAUSAL SYMPTOMS

Notes as to previous health were made in the schedules for the purpose of examining whether this *factor influenced in any way the type of menopausal* symptoms. In many cases the histories were indefinite, and the value of statements regarding past illnesses were difficult to assess. It was interesting to note, for instance, the importance attached to "heart trouble" by some who had reached a ripe old age. Several of the old women, including one in her 90th year complained that they had "always suffered from a weak heart," though their health had been otherwise good—no credit being allowed to the maligned organ for the fact that it still continued to beat. The records of previous health were, however, classified under "good," "fair," and "bad," and when *the necessary calculations* were made from this *crude* basis, it was found that there was only a small degree of relationship between the previous health and the type of menopausal symptoms, the coefficient of contingency being 0·203 for married and 0·137 for single women.

SUMMARY

From the analysis of the data the following points emerge:—

1. The proportion of women who carried on their usual occupation without any interruption due to symptoms attributed to the menopause was 89·7 per cent., the difference between the married and unmarried groups being insignificant.

2. The percentage of women free from all menopausal symptoms was 15·8. The percentage of women relatively free, flushing being the only symptom, was 20·6. The proportion in each case was greater in single than in married women.

3. Greater frequency in the following symptoms were found amongst married women: flushing, headache, giddiness, "rheumatic" pains, hæmorrhage, pains in the breast, and, markedly so, obesity. In nervous instability and change in the thyroid, the larger proportion was amongst the unmarried.

4. There was little or no correlation between the age of onset of menstruation and the age at the last period for either married or single women. Notwithstanding that a considerable number of women stated *that the menses had not recurred after the last* confinement—which was, in some cases, definitely earlier than the usual menopause age—the analysis showed that childbearing, even when allowance was made for age at marriage, in no way influenced the age at the menopause.

5. There was some evidence that normal menstruation tended to be followed by a normal menopause, and a history of dysmenorrhœa by more marked menopausal symptoms. This was slightly more defined for single than married women.

6. Previous health was a factor of no marked importance in influencing the onset or severity of menopausal symptoms.

The members of the subcommittee who presented the above report to the Council of the Medical Women's Federation were as follows: Lady Barrett, M.S. (chairman), Prof. Winifred Cullis, D.Sc., Dr. Letitia Fairfield, London; Miss Ruth Nicholson, M.S., Liverpool; Dr. Mona Macnaughton, Newcastle-on-Tyne; Dr. Cecilia F. Williamson, Ipswich; and Dr. Alice E. Sanderson Clow (hon. sec.), Cheltenham.

THE DOCTOR'S DAY

> "Come, tell me how you live," I cried,
> "And what it is you do!"

X.—THE CORONER

THE principal duty of a coroner is to investigate all sudden deaths of unknown cause, deaths from violence of all kinds, and all unnatural deaths—e.g., deaths from poison, anæsthetics, alcoholism, or industrial diseases. Most of the deaths requiring investigation are reported to the police station or to the coroner's office, and the coroner's officer of the borough in which the death took place then makes his inquiry and presents a written report each day to the coroner. The perusal of all these reports is the first daily duty of the coroner, and he then decides whether an inquest will be necessary, or whether the doctor can properly and safely certify the cause of death, or whether a post-mortem examination would be likely to clear up the doubt and so avoid the necessity for an inquest. If he decides that an inquest ought to be held, then he fixes the time, directs what witnesses should be summoned, orders the removal of the body to the mortuary, orders a post-mortem examination, if required, says who is to make it, and issues his warrant for the summoning of a jury when necessary—e.g., a street fatality, or a death from a factory accident. In factory cases notification is sent to the factory inspector of the time of the inquest, and if there is suspicion that the case may be one of murder or manslaughter then the coroner informs the Criminal Investigation Department at New Scotland Yard, and inquiries are set on foot by them.

Roughly about half of the cases reported to the coroner can be dealt with under the Act of 1926 by ordering a post-mortem examination, usually by an expert pathologist; if this reveals a natural death, then the case can be so certified by the coroner and no inquest will be required. Other cases requiring his attention are those where a death has occurred rather suddenly and unexpectedly, and, although there may not be any suspicion that the death is other than a natural one, yet the doctor may feel it his duty to inform the coroner of the death. A little inquiry will often clear up such a case, and will enable the coroner to authorise the doctor to issue a certificate of death. Then there is now an Act which requires all deaths of persons whose bodies it is sought to remove out of England to be reported to the coroner; a consideration of the death certificate and the general circumstances surrounding the death will generally satisfy the coroner that there is no need to hold an inquest.

INQUESTS AND JURIES

Having thus *cleared* his table the *coroner* will proceed to dispose of his daily list of inquests. He may have as many as 1500 cases reported to him in a year, and he will probably hold not far short of 800 inquests. Fortunately, a good many of these so to what amount. Here, as is pointed out in this correspondence, the doctor is definitively tried by his colleagues who know and realise his difficulties. The report of the panel committee goes to the Ministry of Health and to the insurance committee. The Ministry may think the report does not suggest adequate compensation to the public funds for the extravagance indicated, and the matter is then referred to two doctors and a lawyer, who start de novo. In this inquiry the practitioner may be helped by a legal man.

This procedure, which should by now be familiar to the parties concerned, does not, in reality, lead to many cases of surcharging. We agree with the Glasgow critics that it is a pity there have been no cases of investigation of under-prescribing. The areal average must be arrived at by taking into consideration those above the average and those below, and it would seem only fair to require an explanation from practitioners whose average is much below that of the area. Patients are entitled to proper and sufficient medicines, and if a practitioner does not give sufficient medicines he is breaking regulations as much as the over-prescriber. And these patients are not very likely to make complaint. The public are rather fond of cranks, and are apt to think that the doctor who says, "I don't believe in medicines" is cleverer than his brother practitioner. It does not occur to them that he may not know how to use drugs properly.

Appeal to a court of law against surcharge commends itself to newspaper correspondents in Glasgow. But this is a double-edged weapon; for if a disgruntled doctor is to be allowed to appeal against the decision of Ministry, panel, or insurance committees in a highly technical matter on which he has been tried by his own colleagues, these committees too must be allowed to appeal to the courts in cases in which the Minister decides against them. The important matter is that justice should be done. From a somewhat prolonged survey we have yet to discover an official of the Ministry, or a court of referees set up by it, failing to interpret the regulations in an impartial manner.

Mileage in the North Riding

At a meeting of the insurance committee for the North Riding of Yorkshire it was reported that the inability to find a successor to the medical practice at Appleton Wiske had resulted in the allocation of patients to doctors in the surrounding area which would mean an additional call of £210 on the mileage fund. This, it was suggested, might involve hardship on insured persons over a wide area; some patients would require to make journeys on a restricted bus service to Northallerton to consult their medical man, and to wait several hours before they could make the return journey. A substantial subsidy to a doctor to live at Appleton Wiske would be more economical than a charge on mileage fund, but there seems to be no suitable house in the place, and the practice is so poor that even with a subsidy of £200 a medical man could not live on the spot.

Attendance on Poor Old People

Last month an elderly woman died in East Ham from perforated gastric ulcer without having been seen by the doctor. At the inquest the district medical officer stated in evidence that this was an old public assistance patient with many troubles, and after seeing her on Nov. 16th he told the relatives to inform him if she became worse, the next thing he heard about one month later was she was dead. "I have to attend all the old cases of East Ham," he is reported as saying, "and I cannot see all these people as often as I should like," adding: "I have been here five years, and this is the first time it has happened—owing mainly to good luck." Why, it may be asked, cannot these old people have a choice of panel doctors, responsible to some committee comparable to those of the National Health Insurance system? Were the public assistance committee to join up with the public medical services, as they exist in many parts of the country, this over-pressure of work on doctors would be avoided and these old people would receive the standard of medical practice to which they are entitled.

Economy Gone Wrong

The London pharmaceutical service subcommittee recently found a chemist guilty of a breach of the terms of his service for failing to supply medicaments ordered. The complainant alleged delay. The facts were that a doctor ordered sod. morrh. 10 per cent., one 2 c.cm. ampoule for intravenous injection, the insured person being told that he could have this if he would call the following evening. Inquiries by the chemist elicited that the manufacturers could not supply a single ampoule, and that the smallest box contained five ampoules. An approach was then made to the practitioner, who was requested to order five ampoules, but refused. Three days later the medicament had not been supplied, notwithstanding that the insured person had called several times. The practitioner then gave him an injection, using his own stock for the purpose. The chemist admitted that he did not dispense the prescription, and relied on the defence that the smallest quantity of ampoules he could obtain from his wholesale house was five, whereas the prescription ordered only one and the prescriber refused to amend the order. He did not want to have left on his hands four ampoules for which he might not be able to find a customer. This point is, however, covered by Section 14 of the Drug Traffic, which forms part of the terms of service:—

> Where a proprietary preparation is required by the prescription to be supplied without dilution or admixture, and is available only in packages of definite sizes, a chemist may, if the preparation does not come within the scope of the Dangerous Drugs Regulations, supply the size approximating most closely to the quantity of preparation prescribed where this quantity does not correspond exactly to the quantity contained in a package. Payment for quantities of proprietary preparations other than those prescribed will be made only where the chemist forwards to the pricing office, with the appropriate prescription form, particulars of the quantities supplied.

The chemist should have supplied five ampoules and marked the prescription accordingly. But it seems rather hard on a chemist who went to quite a lot of trouble to supply what was asked for, and hesitated only from a desire for economy, should be found guilty of a breach of the terms of service.

SUN, AIR, AND SEA-BATHING IN HEALTH AND DISEASE.—Sir Henry Gauvain, medical superintendent of Lord Mayor Treloar Cripples' Hospital and College, Alton, Hants, will lecture on Sun, Air, and Sea-bathing in Health and Disease, in the Great Hall of the British Medical Association, Tavistock-square, W.C., on Tuesday, Feb. 21st, at 8 P.M. The lecture is the fifth Sir Charles Hastings Lecture, inaugurated by the British Medical Association and designed to afford public information from high authorities on matters of general health interest. The chair will be taken by the president of the Association, Lord Dawson of Penn, and after the lecture relevant questions in writing are invited. Admission will be free by tickets obtainable on application to the financial secretary, B.M.A. House, Tavistock-square, London, W.C.1.

PANEL AND CONTRACT PRACTICE

A Scheme of Dental Contract Practice

WE have received from the British Dental Association a scheme of contract practice for dental work which is designed to assist the British Medical Association's proposal for a general medical service for the nation. In this proposal the view was expressed "that arrangement should be made by the community with the dental profession for a comprehensive dental service." The scheme presented by a special committee of the Dental Association deals primarily with insured persons, but it could be adapted to include dependents. It is designed to prevent dental disease and to give treatment in the very earliest stages. Dental health is shown by experience to be best maintained by examination and treatment at regular intervals. The committee thinks that a per-capita payment would be best in the public interest, as it leaves the dentist free to exercise his professional judgment, and ensures the maintenance of contact between patient and dentist so necessary to secure dental fitness. It suggests that the family dentist would become parallel to the family doctor, and that whilst some control may be necessary limits should be placed on third-party interference. In brief the scheme is this:—

Each participating dentist should provide general dental treatment to maintain every insured person on his list in a dentally sound condition in return for a fixed capitation rate per annum. Before an insured person is accepted he must be dentally sound. If he is not dentally sound the dentist would have to make him sound and be paid according to a definite scale of fees for the necessary work done. The control of the scheme would be on lines parallel to that of medical benefit under the Act, with Ministry of Health, insurance committee, and dental panel committee; a dental service subcommittee would deal with complaints, as does the medical service subcommittee.

All insured persons, after a short qualifying period, would be eligible for treatment, to include scaling, gum treatment, filling with plastics, root treatment, extractions, with local and general anæsthetics (other than prolonged), provision of dentures for maintenance of reasonable standard of mastication and general appearance, repairs, and remakes. Such things as gold and porcelain fillings, radiograms, crowns, and bridges, orthodontic apparatus, would not be included, and might be provided at an extra charge, with permission of the insurance committee. Payment to be subject to revision, but an adequate service could be provided, the committee thinks, at a capitation rate between 12*s.* 6*d.* and 16*s.*

Dentists would be required to provide suitable waiting-room and surgery accommodation, to keep records, to have stated hours of availability, and to give necessary emergency treatment. The patient would be required to be examined periodically, to be punctual, and to carry out instructions.

This scheme is theoretically good, but unfortunately the parallel between it and the medical scheme is not close in that, whilst there are quite a number of insured persons who are really fit and do not require medical attention, this is hardly ever so with their dental condition. There would thus be a very high initial cost in putting every insured person's mouth into a dentally fit condition before acceptance under the scheme. Again, practically all dental work is operative, and most insured persons would require several periods of 15–20 minutes for fillings before their mouths could be pronounced dentally fit. Most doctors can do all that is necessary for an insured person in five to ten minutes at the bedside; per contra they waste time in travelling from door to door waiting on doorsteps which the dentist does not have to do. Clearly there would have to be definite limitations of lists to enable the work to be properly carried out, and it is doubtful if the dental profession is sufficiently numerous for the purpose. Nothing is said in the scheme as to how the money is to be raised for the work, but obviously one method would be to increase the health insurance stamp on cards. It would be interesting to hear what the actuaries would say was necessary to finance such a scheme, but with an insured population of 15 millions the cost at 15*s.* per head would be over 11 million pounds, apart from administration or materials. A 100-gallon cylinder of gas at 5*s.* 8*d.* may suffice for ten average cases—still an expensive item; an anæsthetic fee at 10*s.* 6*d.* a case, payable to the doctor, would cost quite a lot.

It is thought that some such dental scheme will come into existence, for the present system of payment to dentists for work done is not satisfactory because of the frequent inability of the insured person to pay his share of the cost, when the approved society agrees to pay the other, and because dental benefit is not a statutory benefit but an additional benefit, entirely in the hands of approved societies to give or not to give as they think fit. Many societies at the present time do not give dental benefit at all, and many more refuse dental benefit to women. Some insured persons are therefore not getting dental benefit at all; others could get it if they could afford to pay their share of the cost. This is hardly a satisfactory state of affairs in view of the importance now attached to maintenance of dental fitness.

Surcharging

The surcharge of insurance practitioners in Glasgow is giving rise in newspapers to headlines such as "Danger of efficient prescriber being penalised," "Where duty becomes offensive," and so forth. However much we may regret the necessity of regulations for this purpose, or, for that matter, for any purpose under the National Health Insurance Acts, with such huge numbers of patients and with so many doctors, it is not surprising to find some who do not play the game; and as the supply of proper and sufficient medicines is paid for out of public funds it does become necessary to protect those funds from over-generous use—e.g., the prescription of a pound of cotton-wool with a proportional amount of lint for the treatment of a cut finger; or, as in a reported case, of 5 hundredweight of malt and cod-liver oil in one quarter for the patients of a firm of doctors. The procedure adopted is now fairly well known. A doctor's prescribing cost is found by pricing all his prescriptions and dividing by the number in each quarter; if this average is markedly above the average of all the other doctors for the same area the prescriptions are scrutinised and it is thus discovered whether there is anything special in this batch to account for the higher cost. For example there may be much insulin ordered or polyvalent antistreptococcal serum or some obviously necessary high costing medicament which would raise the average cost.

The next procedure is for the regional medical officer to interview the practitioner, generally with a member of the panel committee for the area, to hear his explanation of the higher cost. If this is satisfactory nothing more is heard of the matter, but if not satisfactory—some cases in this category seem to indicate a complete lack of interest or responsibility in the use of public money—the matter is referred to the panel committee, who again interview the practitioner, hear his explanation, and thereupon decide whether there has been extravagance, and if himself whole-heartedly into the task of reorganising the pathology department from the point of view of teaching. Firmly convinced that a knowledge of the principles of pathology was essential for a proper appreciation and understanding of clinical medicine and surgery, he did all in his power to ensure that his students had ample opportunities for acquiring that knowledge. He was conscientious and thorough in all his teaching, and his lectures were models of systematic method. He established and organised a small teaching museum, in which the specimens are arranged in a manner which enables the student to study not only the diseases of individual organs but also the effects of the commoner diseases on the various organs in the body. The catalogue, which contains a detailed description of each specimen, was his own work, and students at Guy's have taken full advantage of these facilities, of whose teaching value there can be no doubt. He was an occasional contributor to the Guy's Hospital Reports, in which he published an important paper on Hæmochromatosis in 1929, and he was also responsible for a series of experimental investigations in connexion with the work on puerperal sepsis by the late Dr. Remington Hobbs.

Donaldson was a many-sided man, having, in addition to his medical qualifications, diplomas both in tropical medicine and public health, while he was a sound classic and a good French and German scholar. His handbook on practical histology, a second edition of which appeared last year, contained much valuable teaching. In the first edition the work only attempted to be a guide to morbid histology, but in the later issue the scope of the work was extended, and concise accounts of the pathology and morbid anatomy of different lesions were included with descriptions of their histology. The addition of short sections on parasitology and histological technique made of the work a text-book in which the whole subject is treated comprehensively; the essential points were reproduced in a clear manner, accompanied by excellent pictures.

Donaldson's classical training and interests in modern literature made him an attractive conversationalist and a competent critic sometimes inconveniently outspoken. He was a real Scot; he loved the Highlands and Islands, and during the last year had been studying Gaelic in order to get in touch with the people. He was a man of deep religious convictions, whose family life was ideal. He married Annie, daughter of the late John Owen of Blaenau-Festiniog, and is survived by her and their two daughters.

SIR CHARLES CLUBBE, K.B.E., M.R.C.S. Eng.

CONSULTING SURGEON, ROYAL ALEXANDRA HOSPITAL FOR CHILDREN, SYDNEY

With the death of Sir Charles Clubbe, at the age of 78 years, Australia loses one who has been an outstanding personality in the Commonwealth for many years.

Charles Percy Barlee Clubbe was born at Hughenden Vicarage, Buckinghamshire, in 1854, the son of the Rev. Charles Clubbe. He was educated at Uppingham, whence he proceeded to study medicine at St. Bartholomew's Hospital, and obtained the diplomas of M.R.C.S. Eng. in 1876 and L.R.C.P. Lond. in 1877. After holding a house surgeoncy in Kidderminster, he went out to practice in Natal, and was civil surgeon attached to the Army Medical Service during the Zulu War in 1879. At the close of that war he returned to England and was appointed chief resident medical officer to the Manchester Children's Hospital, thus beginning an association with the diseases of children which lasted until his death. In 1883, for reasons of health, Clubbe went out to Australia, and settling in Sydney he was appointed promptly to the Children's Hospital, now known as the Royal Alexandra Hospital for Children. Largely as the result of his personal efforts and work the hospital is held in high esteem by all, and his own success in the early diagnosis and prompt treatment of intussusception was remarkable. He was a member of the staff for over thirty years, and on his retirement retained his position as president of the hospital and chairman of the medical board, while in recognition of his services he was presented with his portrait which is now in the possession of the hospital.

Sir Charles was responsible for founding a department for the diagnosis of diphtheria in Sydney, and later was active in raising funds for the provision of serum for the treatment of infantile paralysis. He was one of the founders of the Royal Australasian College of Surgeons, hon. consulting surgeon to the Deaf, Dumb, and Blind Institute, and at different times was a member of the staffs of the Royal Prince Alfred Hospital, the Coast Hospital, and the Greycliffe Home for Babies. He was for many years chairman of the executive of the District Nursing Association. He was knighted in 1927. His abiding interest in life was the study of the diseases and treatment of children; and the Royal Alexandra Hospital for Children, as it is at present, is a monument to him.

CECIL FOWLER BEADLES, F.R.C.S. Eng.

PATHOLOGICAL CURATOR OF THE COLLEGE

MR. BEADLES

Cecil Beadles, who died on Jan. 3rd at his home at Egham Hill, aged 66 years, came of a family of general practitioners, some of whom practised in Forest Hill and others at New Southgate, when both were villages which had not yet become engulfed by the suburbs of London. He was educated at University College, where he won the gold medal in histology in 1885 and became known to S. G. Shattock, then curator of the College museum. He qualified M.R.C.S. and L.R.C.P. in 1890, and must soon have recognised his unfitness to deal with private patients, for his shyness made him brusque in manner and address. He was house surgeon at the Cancer Hospital for a short time, and from 1892 until 1906 was assistant medical officer at the London County Asylum, Colney Hatch, at a time when it became widely known owing to a disastrous fire causing the death of several inmates. His work here on the degenerative lesions of the arterial system in the insane led to the award of a prize by the Medico-Psychological Association.

In 1906 Beadles resigned his post at Colney Hatch to become an unofficial worker at the Royal College of Surgeons, and two years later he was

OBITUARY

ALEXANDER MITCHELL STALKER, M.D., LL.D. St. And.

EMERITUS PROFESSOR OF MEDICINE IN ST. ANDREWS UNIVERSITY

WE have already recorded the death of Prof. Stalker which occurred on Dec. 24th at the age of 79.

Alexander Mitchell Stalker was the son of Donald Stalker, of Leven, Fife, and was born at Leven in 1853. His early education was received at Leven, but most of his school days were spent at the Royal High School, in Edinburgh, before entering the University as a student. Here he had among his contemporaries the two Seths—Andrew, who became professor of logic and metaphysics, and Young, who became professor of moral philosophy in the University—and Lord Haldane, but Stalker held his own with them. He graduated M.A. with first-class honours in mental philosophy, and throughout his life he retained his interest in philosophy and literature generally. As a medical student he obtained the M.B., C.M. in 1881, and became house physician to Prof. Grainger Stewart at the Royal Infirmary. A period of post-graduate study at Leipzig followed and then a short spell as resident medical officer at Murray House, Perth. Having proceeded to the M.D. degree he then began practice in Dundee, and promptly secured various junior appointments, and in 1888 became physician to the Dundee Royal Infirmary. He now prepared the original draft for a clinical school of medicine in Dundee in association with the adjacent university of St. Andrews, and in 1898 was appointed the first occupant of the chair of medicine, a post which he held for 25 years, during which time he saw the young school steadily develop in strength. During his long period as professor he was entirely responsible for the lectures on the institutes of medicine, and shared with the late Dr. Mackie Whyte the clinical instruction of the students, the two men forming an interesting contrast, for Whyte was precise and methodical, while Stalker, more philosophical in his teaching, appeared interested rather in the individuality of the sick patient than in the scientific study of disease. He was, indeed, of that older scholarly type of physician, preserving a catholic interest in humanity.

PROF. STALKER

[Photograph by Partoon.

In addition to his duties as a professor and as an important member of the hospital staff, Stalker found time to hold other appointments, and was for long medical officer to H.M. Prison, Dundee, where he used his opportunity to study with interest the criminal mentality of the inmates. He retired from the staff of the Dundee Royal Infirmary in 1923, becoming at the same time Emeritus professor of medicine at St. Andrews, and since that time enjoyed fair health till recently; but just before completing his eightieth year he succumbed rapidly to an acute attack of bronchitis. His wife had predeceased him by several years and his eldest son was killed in the war; he is survived by a family of three daughters and three sons, one of whom is at the present time assistant physician to Dundee Royal Infirmary.

A colleague of Prof. Stalker writes: "Prof. Stalker has left behind him the memory of a lovable man, unworldly and generous to a point almost beyond his means. He had a gift for friendship. Of a retiring nature, he was at his best in a small company, where his slow judicious speech with his witty sallies made him ever welcome."

ROBERT DONALDSON, M.D., F.R.C.S. Edin.

PROFESSOR OF PATHOLOGY IN THE UNIVERSITY OF LONDON

WE regret to announce the death of Prof. Donaldson, pathologist to Guy's Hospital, which occurred on Jan. 3rd in the fifty-sixth year of his age, from pneumonia, after a very brief illness.

Robert Donaldson, the son of Mr. James Donaldson, of Corstorphine, was born in 1878 and educated at the Royal High School, Edinburgh, and the University of Edinburgh, graduating in Arts in 1898 and as M.B., Ch.B., in 1904. Having decided to follow a bent towards pathology, he did post-graduate work at Marburg and became demonstrator of pathology first at the University of Sheffield, and later at Bristol, where he was assistant pathologist to the Royal Infirmary. He then held a similar post at the Royal Berkshire Hospital, Reading, was curator of the pathological museum, was in charge of the war hospitals laboratory in Reading, and was appointed consultant bacteriologist to the Berkshire County Council. His pathological work at Reading during the war gained him well-earned credit. Much of it was published in our columns, where he wrote on the ætiological factors in cerebro-spinal fever, as indicated by a severe outbreak in Reading in 1915, and on a series of cases of paratyphoid, the infection probably of military origin. He made careful observations, jointly with Dr. J. L. Joyce, then special surgeon to the Reading War Hospital, on wound treatment, which were embodied in a report to the Medical Research Council, and he published also many bacteriological notes founded on his work at the Reading War Hospital. In 1918 he came to London as lecturer in pathology and forensic medicine at St George's Hospital, where he was curator of the museum. Here he did excellent work for the school for ten years. He was an energetic and careful organiser, equally at home as teacher and as collaborator with the staff in questions of morbid anatomy and bacteriology, covering the large field indicated in his serial contributions and later in his book on morbid histology. He suffered considerably during this period of his life from recurrent attacks of influenza, on the bacteriology of which he wrote at some length in F. G. Crookshank's manual. In 1928 he was appointed Sir William Dunn professor of pathology in the University of London, holding the chair at Guy's Hospital, where he was director of the pathological laboratory. On his appointment he threw glands above detailed were still enlarged and tender. Complete left facial paralysis was present. No signs of any other affection. Wassermann reaction (blood) negative.

Since some virus infections are beneficially affected by protein shock therapy, it was decided to try similar treatment in this case. The results appear to warrant a further trial of the method. On July 2nd T.A.B. vaccine, 50 millions, was given intravenously, with a reaction temperature of 101·5° F. and pulse 96 per minute. The reaction was over in 36 hours. Three days later, on the 5th, a 150 million dose was given. In six hours the temperature reached 102·6° F. and the pulse 80 per minute; 18 hours later the temperature was normal and it was noted that the facial paralysis was less marked. A third injection of vaccine, 200 millions, was given on July 11th; the temperature rose to 101·8° F., the pulse 80 per minute in six hours, but had regained normal in 24 hours. Within four days from this date the eruption had completely disappeared, normal sensation had returned, and the facial paralysis completely cleared up.—I am, Sir, yours faithfully,

London, W., Jan. 10th, 1933. HUGH S. STANNUS.

UNSOUGHT PUBLICITY

To the Editor of THE LANCET

SIR,—I hope it is not too late to offer Sir Harold Gillies ongratulations on the action he has taken with regard o certain publicity recently given him in the press. No doubt those of your readers who have suffered rom misrepresentation or unsought-for publicity will heartily approve of the views expressed in the closing paragraphs of his admirable letter. I can sympathise with his resentment, for, like him, I have been a victim of gross misrepresentation in the lay press. My case was not exactly parallel with his, but my reasons for annoyance were equally real, and a sense of it has lasted.

One night in November, 1931, I was awakened by the elephone about 2 A.M. The person at the other end said he was speaking on behalf of ——, mentioning the name of a well-known London newspaper. He wanted to know f the report appearing in that morning's issue of their own paper was correct—a report to the effect that I had been called in consultation and was going to perform an abdominal operation at 8 A.M. upon a distinguished person, at the time n the public eye. I thought my interrogator was some kind friend attempting a practical joke, so I rang off. I was quickly disillusioned. The telephone rang again. This time it was a representative of the Central News, who assured me that there was a report in a paper which he mentioned, and he wished to know if it were true. Thereafter the telephone seemed to ring incessantly and reporters for various papers sought information so persistently that I was forced to have my telephone disconnected. In the morning I found in the centre of the front page of the paper a report—more than half a column of it—with large black headlines, to the effect that "a hurried consultation had been held. . . . So-and-So had been rushed to —— Hospital, and an operation was to be performed at 8 A.M that morning." Then followed a gratuitous eulogy of myself. Now I did not know the celebrity nor his relatives, nor anybody even remotely connected with him. Neither did I know any of the doctors in attendance, nor had I had communication or consultation with them. There was not a vestige of truth in the whole statement, and no member of the staff of the paper had even telephoned *before publication* to know if the statement had any substance in fact. I consulted the secretary of the Medical Defence Union and Mr. Hempson, the solicitor to the Union, but was informed by both that I had no redress: that there was no libel. With the coöperation of Mr. Hempson I wrote to the editor asking that he should trace this statement to its source, and give me an explanation of how it came to be published without the least attempt at verification. All that I received in reply was: "I am in receipt of your letter of yesterday's date, and am giving the matter my immediate attention." Since then I have heard nothing, nor been vouchsafed an apology.

There should be a limit to the activities of reporters in respect of medical men, and they should verify their statements or reports with regard to medical men before publication. I have no doubt nothing is further from their minds than to harm the person to whom they give unsought publicity. This, however, is precisely the effect that may be produced. Publicity is from time to time inevitable for leaders of the profession, but when younger and not so well-established men are thrown into its glare, and for no legitimate reason, the occurrence does them harm with colleagues, and may alienate friendships and support, and definitely affect their future.

Surely, Sir, something can be done along the lines suggested by Sir Harold Gillies. If a meeting could be arranged between responsible leaders of the press and the medical profession, and the whole matter of press publications affecting medical men could be thoroughly discussed in a spirit of coöperation, would it not be possible to lay down, quoting Sir Harold Gillies, "ethical rules . . . departure from which would be condemned in no uncertain way."

I am, Sir, yours faithfully,
MICHAEL SMYTH.
Wimpole-street, W., Jan. 3rd, 1933.

CONGENITAL MALARIA

To the Editor of THE LANCET

SIR,—The statement in your issue of Dec. 31st last (p. 1463) that "leading authorities on malaria are of opinion that malaria is never congenital" is hardly correct; some leading authorities may be of this opinion, but it is not at all universal. If, in malarial districts, the temperatures of all babies are taken just after birth and blood slides obtained from those with a raised temperature, one will at times find parasites, as I proved myself in Mombasa in 1924 and 1925. In Castellani and Chalmers' "Manual of Tropical Medicine" (1919), on page 1134 you will find this statement:

> "It is now known that the merozoites can, although very rarely, penetrate the placenta and infect the fœtus, giving rise to congenital malaria."

Many workers in the tropics admit the entity of congenital malaria, and I, for one, do not look on Dr. Weyl's case as a very exceptional one. I feel sure that if blood slides were taken of all children at birth in any big hospital in a malarious district many cases would be discovered.

I am, Sir, yours faithfully,
N. P. JEWELL,
Lately in charge European Hospital, Nairobi.
Pinner, Jan. 6th, 1933.

SODIUM-SULPHOMETHYL-STIBANILATE

To the Editor of THE LANCET

SIR,—In a brief report, published in THE LANCET of June 4th, 1932 (p. 1235), of a paper read by me before the medical section of the Asiatic Society of Bengal, it was stated that the compound sodium-sulphomethyl-stibanilate was obtainable in the market under the names of Thio-sarmine, Sulfarsenol, and Kharsulfan. This is incorrect. This compound is an antimonial containing sodium-methylene-sulphonic acid radicle, just as thio-sarmine or sulfarsenol is an arsenical containing the same radicle.

I am, Sir, yours faithfully,
UPENDRANATH BRAHMACHARI,
Medical Secretary, Asiatic Society of Bengal.
Calcutta, Dec. 22nd, 1932.

appointed Hunterian professor of surgery and pathology, his subject being the variation in distribution of the cerebral arteries. In October, 1909, he was chosen to assist Shattock in selecting, arranging, and cataloguing specimens in the museum to illustrate the main principles of general pathology. His energy, foresight, orderliness, and excellent technique, aided by Shattock's philosophic outlook, completed "for the first time" (to use the words of Sir Arthur Keith) "a work written not in words but in illustrative specimens—a complete and systematic treatise on general pathology." From 1916 onwards Beadles was engaged in arranging and describing the Army medical war collection of pathological and other specimens, work which occupied him, with the help of Mr. T. W. P. Lawrence, until 1921, when the preparations were entrusted by the War Office to the keeping of the College, and are now exhibited as "The Army Medical Collection." These 3000 specimens illustrate from every aspect the injuries and diseases incidental to warfare. The College recognised his services in 1927, when he was elected F.R.C.S. without examination. He was appointed pathological curator when Shattock died in 1925, and from then onwards was engaged in the never-ending task of making a new descriptive catalogue of the pathological specimens in the museum, together with the examination and description of those which are being constantly added.

Sir D'Arcy Power writes: "It may fairly be said of Beadles that he was in the true line of succession of those who have built up the pathological side of the Hunterian museum—Clift, Paget, Doran, Goodhart, Targett, and Shattock. More he would not have wished.

"Somewhat above middle height, clean shaven, with prematurely white hair, and of ascetic appearance, Cecil Beadles was unmarried, and lived for his garden and the Hunterian museum at the Royal College of Surgeons. He was so retiring that he was rarely seen even by his colleagues unless they went to look for him in the workrooms or the museum of the College."

CORRESPONDENCE

THE VALUE OF MASSIVE RADIATION

To the Editor of THE LANCET

SIR,—An agreement with the Radium Commission prohibits members of the Westminster Hospital staff from publishing anything about their work with the four-gramme "bomb," but as my experience of teletherapy antedates, and is not confined to, the use of that unit, I feel at liberty to point out certain implications of the final report of the Conference on Radium (THE LANCET, Jan. 7th, p. 44) that may not be entirely obvious.

The two centres selected by Mr. Souttar as examples of what can be done with teletherapy are both of them free from financial anxiety and entirely independent. They are not subject to any of the restrictions imposed on us at Westminster. Both are free to choose exactly what type of case they will study and treat; both are free to reject any case they consider unsuitable; both of them are free to use the available radium in any form and aggregates they like; neither of them is under an obligation, I believe, to present any report until they so desire; in both centres it is thoroughly understood that, except in restricted fields, radium teletherapy has not yet reached a stage in which it is suited for the routine treatment of a hospital's patients.

No one will be better pleased than I to see a big unit re-established in this country, provided it is under the supreme control of a man of great clinical experience, senior enough to secure harmonious working of his team, and able to devote his whole time to irradiation work. Provided also that there is ample financial support, entire freedom of choice as to the use of the radium—whether for physical and biological research, or for clinical work in any selected field—and provided there is no embargo upon the simultaneous employment of other methods if desired.

I do not think the "bomb" establishment ought to be attached to *any* single hospital. If it be attached to one hospital, workers in other hospitals do not find their way into the wards and laboratories as easily as they should. There is a traditional diffidence as to intrusion. That, certainly, has been our experience. Notwithstanding cordial invitation, and entire liberty of access to every detail of our work, scarcely any London radium workers ever set foot inside the doors of our annexe. I believe that I am right in saying that no member of the Conference on Radium or its technical committee had ever paid a visit of investigation (though some visited individual patients), until after the radium was finally withdrawn from the apparatus. Of specialists from the Empire and from other countries, there were several who thought it worth while to learn what we had to show, and we have spent many days in demonstration and discussion with them.

It is highly desirable that every hospital should coöperate, and that all the brains of the profession —including those of the physicists—should be laid under contribution; but that will not be the case unless the institution selected or built for the proposed five-gramme unit is actually independent of any of the general hospitals, even the post-graduate.

I am, Sir, yours faithfully,

E. ROCK CARLING.

London, W., Jan. 10th, 1933.

FACIAL PALSY AND INFECTION WITH ZOSTER VIRUS

To the Editor of THE LANCET

SIR,—The interesting communication by Dr. Aitken and Dr. Brain in your last issue has suggested to me the publication of the following notes.

A man, aged 39, a cook, was admitted under my care on June 27th, 1932. On June 10th he noticed "pricking" sensations over the left side of the face and temple, followed the same day by reddening of the skin of the lower lip, chin, cheek, and temporal region of the same side, rapidly replaced by patches 1–2 cm. in diameter of closely set papules which two days later had become vesicular. This eruption was associated with some swelling and tenderness of the lingual, submaxillary, and auricular lymph glands. By the end of a week the vesicles had burst and were covered with reddish crusts, the paræsthesia which had disappeared now recurred, and the affected areas of skin were tender to touch; there was also some pain in the tongue and in the ear of the same side, and a minor degree of deafness. On June 22nd, that is to say on the twelfth day after the appearance of the herpes, on wakening in the morning the left side of the face was found to be paralysed.

On admission five days later there were found numerous crusted lesions on the areas above described, with complete loss of sensibility over the same distribution. Examination of the left auditory meatus revealed a few broken vesicles on the walls but the tympanum appeared normal. The

st-graduate Course on Tuberculosis

The Joint Tuberculosis Council have arranged for a t-graduate course to be given at the Brompton Hospital. ndon. from Feb. 20th–25th. Particulars may be had m Dr. William Brand. 8. Highway-court. Beaconsfield, cks.

yal London Ophthalmic Hospital

The annual dinner of past and present students of Moor- ds Hospital will be held at the Langham Hotel. Portland- ace. London. W.. on Thursday. Feb. 9th. at 7 for 7.30 P.M. Arnold Lawson will take the chair. and tickets may be d from Mr. Rupert Scott. 70, Harley-street. W. 1.

itish Institute of Philosophy

Dr. C. S. Myers will take the chair at a meeting to be ld at University College. Gower-street. W.C.. at 8.15 P.M. Tuesday. Jan. 17th. when Prof. F. A. P. Aveling will eak on Some Contemporary Contributions of Psychology Philosophy.

oyal Microscopical Society

A presidential address to this society will be given by r. Conrad Beck in the Hastings Hall of B.M.A. House. vistock-square. London. W.C.. at 5.30 P.M.. on Wednesday. n. 18th. His subject is Microscope Illumination with ansmitted Light.

uild of Public Pharmacists

Mr. Wilfred Trotter. senior surgeon to University College ospital. will address a meeting of this guild at the house the Pharmaceutical Society. 17. Bloomsbury-square. ondon. W.C.. at 7.30 P.M. on Wednesday. Jan. 18th. he title of his address will be De Minimis. Dr. C. H. ampshire. secretary of the Pharmacopœia Commission. ll take the chair.

erman Balneological Society

The forty-eighth German balneological congress will take ace in Baden-Baden from April 4th–8th under the presi- ncy of Prof. Dietrich. of Berlin. The principal subjects r discussion will be the Importance of Diagnosis in Health esort Practice and the Present Position of Climatotherapy. he meetings are open to all interested. and communications ould reach the secretary. Dr. Max Hirsch. Derfflingerstr. 7, erlin. W.35. not later than Feb. 1st. 1933.

ociety of Medical Officers of Health

A meeting of this society will be held at 1, Upper Montague- reet. London. W.C.. at 5 P.M.. on Friday. Jan. 20th. A scussion on What do we really mean by Mental Deficiency? ill be opened by Dr. G. A. Auden. school medical officer r the city of Birmingham, and Dr. F. C. Shrubsall. nior medical officer of the London County Council.—The ntal officers' group will meet at 8 P.M. on Friday. Jan. 27th. hen Mr. D. E. Mason will read a paper on Dentistry and e Dental Officer in the Public Health Services.

pring Medical Congress at Wiesbaden

The forty-fifth meeting of the Deutsche Gesellschaft für nere Medizin is to be held at Wiesbaden from Tuesday. pril 18th. to Friday. the 21st. under the presidency of rof. L. Lichtwitz (Berlin). Tuesday will be devoted to a iscussion on the significance of the heavy metals in physio- gy and pathological processes. with papers by Heubner Berlin). Zangger (Zürich). Martini (Bonn). and Embden Hamburg). On Thursday. three papers on the pathology f the erythrocytes and of hæmoglobin will be given by Hans Fischer (Munich). Kämmerer (Munich). and Seyderhelm Frankfurt). The programme for Wednesday includes a ummarising lecture on the problem of the adrenals. Any ho wish to take part should give notice before Feb. 5th o Prof. Lichtwitz at Rudolf Virchow Krankenhaus. Berlin.

West End Hospital for Nervous Diseases

This hospital offers special facilities for the instruction f post-graduate students in neurological and psychological medicine. The out-patient department at 73. Welbeck- treet. London. W.. has an annual attendance of over 0,000 patients. and the practice of the hospital can be attended by payment of a small fee. Appointments are also vailable as hon. clinical assistants and hon. clinical psycho- ogists. and there is a special clinic with training centre nd a fully equipped child guidance unit associated with the out-patient department. The in-patient department in Regent's Park. containing 76 beds (with a special ward of 5 cots for children), affords opportunities for the study and nvestigation of a wide range of cases. Two courses of ecture demonstrations are arranged annually in conjunction ith the Fellowship of Medicine. and the hospital is also ssociated with Bethlem Royal Hospital in the provision f courses for the diploma of psychological medicine.

History of Plague in England

On Friday. Jan. 20th. at 8.45 P.M.. at the Princess Elizabeth of York Hospital for Children. Shadwell. E.. Col. W. P. MacArthur will give a lantern lecture on Plague in England in Old Times. Visitors are invited.

Devonport Military Hospital

This hospital, built at the end of the eighteenth century. is shortly to be sold by auction by order of the War Office. When. some time ago. it ceased to be used for soldiers wounded in the war it was offered to the corporation of Plymouth on generous terms. but the cost of adapting the buildings to municipal purposes was found to be prohibitive.

Dufferin Hospital for Children, Belfast

An extension of this poor-law hospital. named the "Ava" wing. which has cost £31.500, was opened on Dec. 29th by the Marchioness of Dufferin and Ava. All the wards have purposely been made small for the confinement of infection to a small area. An anæsthetic room has been provided adjoining the theatre.

London School of Hygiene and Tropical Medicine

A course of lectures on some aspects and problems of medical and industrial psychology will be given at this school on Mondays and Wednesdays during the present term. The lecturers will be Prof. Millais Culpin, Mr. Eric Farmer. Prof. Major Greenwood. and Miss May Smith. The first lecture. a historical introduction. will be given by Prof. Greenwood on Jan. 16th at 2 P.M. The course is primarily intended for students taking the diploma in public health or the diploma in industrial psychology of the University of London. but other members of the medical profession or students of the university are invited to attend.

People's League of Health

On Monday next. Jan. 16th. the twelfth annual series of Sims Woodhead memorial lectures. consisting of 13 "constructive educational health lectures." will open at the headquarters of the National Union of Teachers. Hamilton House, Mabledon-place. London. W.C. They will be given on consecutive Mondays at 6 P.M.. and the lecturers will be Dr. K. B. Aikman. Dr. J. S. Fairbairn. Dr. W. J. O'Donovan. Prof. D. F. Fraser-Harris. Prof. S. J. Cowell. Dr. J. Burnett Rae. Sir Leonard Hill. Dr. John Oliver. Dr. Philip Manson-Bahr. Dr. W. G. Willoughby. Dr. J. Sim Wallace. Sir Thomas Oliver. and Sir Frederick Hobday. Particulars may be had from the general secretary of the League at 12. Stratford-place. London. W. 1.

Hospital Libraries

A meeting under the auspices of the London and Home Counties Branch of the Library Association will be held at the Middlesex Hospital nurses' home. Foley-street. W. 1. on Jan. 25th. at 3 P.M. Miss Marian Frost will preside. and short papers will be read by Mrs. R. Beddington and Mrs. Richmond. honorary librarians to the Middlesex and Guy's Hospitals. Dr. W. J. T. Kimber. Mr. C. E. A. Bedwell. house governor. King's College Hospital. and Mr. G. R. Bolton. borough librarian. Watford. An exhibition will be held of methods and stationery. including book labels. employed by the various hospital libraries. Any exhibit that is likely to prove of interest should be sent to Mr. Bolton. Public Library. Watford. before Jan. 21st.

Edinburgh Royal Infirmary

The report for the year ended Sept. 30th last states that it has been necessary to draw upon the invested funds to the extent of £18.726. after utilising all legacies not earmarked for endowment. The deficiency has been met by other legacies and special donations amounting to £19.000. but the managers feel so much anxiety that a committee has been appointed to consider the whole financial position. Almost every item of ordinary income shows a reduction: a conspicuous exception is an increase of over £800 in receipts under the Road Traffic Act. Legacies fell from £75,000 to £56.000. The total of the year's ordinary expenditure was £157.000. a small increase. In-patients numbered 19.145; the daily average under treatment was 980. a fractional increase: at 17·45 there was also a fractional increase in the number of days' stay. Despite all efforts to reduce it the waiting list showed an average during the year of 3057. Out-patients exceeded 66.000. a substantial increment. The cost per occupied bed was £160 5s. 5d. and the average cost per day per patient 8s. 9d. A system of budgeting has been introduced. the expenditure of each department being restricted to a given figure "so far as it is possible to do so and maintain efficiency."

"EPISTAXIS WITHOUT TELANGIECTASIA"

To the Editor of THE LANCET

SIR,—Since Fordyce (1784), Sutton (1864), Babington (1865), Legg (1876), Chiari (1887)—not to mention Frank (1840), Rendu (1896), Osler (1901, 1907, 1911), Kennan (1902), F. Parkes Weber (1907), Goldstein (1921, 1930, 1931, 1932), and many others—reported their cases of heredofamilial bleeding (non-purpuric and non-hæmophilic), epistaxis with and without telangiectasia, a number of interesting papers on this subject have appeared. There are probably recorded to date about 110 or 120 families and about 700 persons suffering from Rendu-Osler-Weber's disease (heredofamilial epistaxis with or without familial hæmorrhagic telangiectasia) in the entire available medical literature of the world. In your issue of Dec. 17th Dr. Eric Wordley reports a family suffering from "epistaxis without telangiectasia." I believe if careful search were made, telangiectases would be found in some members of this family—in the nose, mouth, rectum, or under the finger-nails, on the lips, tongue, palate, conjunctivæ, or somewhere on the body.

I am, Sir, yours faithfully,
HYMAN I. GOLDSTEIN, M.D.

Camden, New Jersey, U.S.A., Dec. 27th, 1932.

DOSAGE OF INSULIN

To the Editor of THE LANCET

SIR,—As a diabetic of moderate severity (40–50 units insulin a day) and a medical man, I should like to emphasise to fellow sufferers, and those who treat them, the importance of not only standardising the diet, but of *stabilising* the dosage of insulin to that diet with each fresh batch of insulin employed. The urine should be tested three-hourly for three days after commencing a batch of insulin, as the alteration of *quantity* (if any) required does not make itself manifest in the urine at once. I, having stabilised my dosage for the batch, make an arrangement with the supplier to put on one side the whole of that batch for my special use.

I would like to quote from "Physiology and Biochemistry in Modern Medicine," by J. J. R. Macleod (6th ed., 1930, p. 919), "The Assay of Insulin." The definition of a unit of insulin as accepted by the Standardisation Committee of the League of Nations is given, and Prof. Macleod makes the following statements:

> "A *latitude* of about *15 per cent. either way* is therefore allowed in the assay of the manufactured product. This fact should be borne in mind by physicians using insulin in the treatment of diabetes, and *in changing from one batch to another, patients should be carefully watched* for a *day or two* to see that the *previous dosage is maintained.*" (The italicising of the words quoted do not appear in the text.)

If I had not fortunately consulted this work I doubt if I should be alive now to write this letter. I believe the latitude allowed in the new British Pharmacopœia in the standardisation of insulin is reduced to 10 per cent., but even if this is so it would still be a very serious matter to a case of true diabetes, and probably would not apply to brands of French or other foreign manufacture.

I am, Sir, yours faithfully,
"A DIABETIC DOCTOR."

Jan. 2nd, 1933.

⁂ Since other variables, such as absorption rate, are so great and food-table values merely approximate, our correspondent seems hardly justified in attributing his continuance in health to the discovery of a 10 or 15 per cent. discrepancy in the potency of his insulin, and it is unlikely that a difference of th order could be appreciated by a patient. The assay of insulin is one of the most accurate of its kind, and to obtain a reproducibility of 10 per cent in a biological method indicates a triumph over technical difficulties. British insulin is, we believe, standardised to as high a degree of accuracy as any insulin in the world.—ED. L.

EPSOM COLLEGE

To the Editor of THE LANCET

SIR,—Having read Dr. Raymond Crawfurd's appeal I have sent him one guinea, in the hope that 499 othe grateful patients will do the same—as they should.

I am, Sir, yours faithfully,
A GRATEFUL PATIENT.

Jan. 7th, 1933.

MEDICAL NEWS

University of London

At recent examinations the following were successful:—

M.D.

Branch I. (Medicine).—J. V. Armstrong and Alison M. Clar St. Mary's Hosp.; F. S. Cliff, Univ. Coll. Hosp; *E Conybeare, Guy's Hosp.; Idris Davies, Cardiff and Westminst Hosp.; W. P. Greenwood, St. Bart.'s Hosp.; G. B. M. Hegg St. Mary's Hosp.; H. B. Hodson, St. Thomas's Hosp; H Howell, London Hosp; Alfred Mitchell, King's Coll Hosp A M. Nussbrecher, Middlesex Hosp.; Nellie H. Reynolds Cambridge and King's Coll Hosp.; Ursula Shelley, Roy Free Hosp [illegible] 's Hosp; H. C. Trowell St T [illegible] J. Vinter, Roy. Free Hosp

Br [illegible] Oakley, Univ. Coll. Hosp, C. G [illegible] K. Simpson, Guy's Hosp, and [illegible] ondon and Guy's Hosps

Br [illegible] *seases of Women)*—Mabel A Baker, Roy. Free Hosp; Kathleen M. D. Harding, Roy Free and St. Mary's Hosps.; Eileen S. Morris, Univ. Coll Hosp *W. C W Nixon, St. Mary's Hosp.; E. M. Shippam, Roy Free Hosp.; and H. J. D. Smythe, Univ. of Bristol and London Hosp.

Branch V. (State Medicine).—A. R. Thompson, London Hosp and London School of Hygiene.

* University medal.

Two lectures on Iodine and the Thyroid Gland will be given in the governors' hall, St. Thomas's Hospital, S E by Dr. Edward Mellanby, professor of pharmacology in the University of Sheffield, at 5 P.M. on Thursday, Jan 26th and Friday, Jan. 27th. The subject of the first lecture at which Prof. John Mellanby will take the chair, is Goitres—Experimental and Clinical, while on Friday the lecturer will speak on Hypo- and Hyper-thyroidism. No ticket is required.

The Out-patient Problem

In a message to King Edward's Hospital Fund for London the Prince of Wales, the president, refers to the report on out-patient departments just issued (THE LANCET, Jan 7th pp. 42 and 51) It will, he says, enable the public to realise how difficult a problem it is, and how many experiments the hospitals themselves have been making to reduce the hours of waiting "But the report," he says, "is more than a mere academic discussion of the question It is meant to lead to action. Its actual recommendations are carefully worded so as to respect the freedom of the individual hospitals, which is an essential feature of the voluntary system. But the committee present a strong prima facie case for believing that part of the waiting time can be reduced, and they want the hospitals to study that case in detail with a view to taking action wherever it is practicable." Accordingly the Prince has appointed a small committee which shall have power not only to consider, in consultation with the hospitals, what steps can be taken, but, in coöperation with the management and distribution committees, to take the necessary steps.

This committee will be called the out-patients' arrangements committee, and will consist of Sir John Rose Bradford consulting physician to University College Hospital (chairman); Dame Rachel Crowdy, R.R.C.; Sir Ernest Morris late house governor of the London Hospital; Sir Isidore Salmon, M.P., chairman of J. Lyons and Co.; Mr. Eric Pearce Gould, surgeon to Middlesex Hospital; Lieut.-Colonel A. P. Irwin, clerk to the governors of St. Thomas's Hospital; and Mr. R. H. P. Orde, hon. secretary of the British Hospitals Association.

NOTES, COMMENTS, AND ABSTRACTS

THE MEDICAL SCHOOLS AND THE NATION'S HEALTH*

BY JAMES YOUNG, D.S.O., M.D., F.R.C.S. EDIN., F.C.O.G.

GYNECOLOGIST TO THE ROYAL INFIRMARY, AND PHYSICIAN TO THE ROYAL MATERNITY HOSPITAL EDINBURGH

(Concluded from p. 63)

The Doctor and the Public

ENOUGH has been said, as I believe, to prove that by the necessities of their development the medical schools have acquired an organisation equipped for the study of disease but ill-devised for the study of health. It is not easy to see how on a tree of such sturdy growth we can engraft a stem of such different lineage. And yet, if we are to take our part as a creative force in the crusade for health, it is clear that this can be done only by some fundamental breach with the past. A complete readjustment of outlook and a profound change in our method are called for. We must be satisfied with no ambition short of one which aims at capturing for our schools and our profession a rôle that is creative and charged with leadership. In the machine of public health the medical profession through its health officers has fulfilled and is fulfilling an important task as policeman, but in the new outlook we must envisage a function of deeper and fuller responsibility.

The apathy of organised medicine towards the positive value of health ideals is a matter of frequent public comment and it has been instrumental in creating a certain estrangement between the laity and the profession, which has been increasingly evident during the past generation. The spread of education, the increased interest being taken in personal and public hygiene, and the opportunities now presented to large numbers of the non-medical public through the health activities of the local authorities to identify themselves with recent progressive movements have all contributed to an increasing appreciation by the community of the extent to which this inertia exists in medical corporations and in medical circles generally. We have quoted instances showing how the lack of the energetic participation of the profession in matters particularly within its concern has resulted in the community being compelled to assume for itself the function of leadership, for example, in regard to the protection of child and maternal life. The same is true of many other health matters. Indeed, to the student of present-day life one of the most remarkable things is this spontaneous and rapid spread of health ambitions and ideals in the nation and the manifold shapes these assume.

In passing we should perhaps point out that the change in the attitude of the public towards the profession has had additional causes. Amongst these probably one of the most significant arises from the fact that the general enlightenment of the public in matters relating to health has brought with it a dawning realisation of the fallibility of the doctor. This is a common topic for raillery in modern literature in which the profession has become a favourite butt of the dramatist and the novelist.

In self-defence we may plead that this affection of omniscience by the medical man has never been truly of his own creation, except in so far as he has allowed himself too rigidly to submit to the convention that it is improper for the doctor to take the public into his confidence through the medium of the press or the platform. The intention underlying this injunction is sound; yet it has undoubtedly contributed to the creation of misunderstanding and it has hindered that identification of the profession with public sentiment and effort that would have been for its good. Further, the peculiar and special nature of our knowledge has tended to make it recondite to the uninitiated; indeed the very language of medicine is in itself a deterrent to a free interchange of ideas as any of us knows who has tried to explain the circumstances of an illness to the friends of the sufferer.

There is another consideration which in the opinion of some has seriously damaged the profession in the eyes of the public and which we cannot afford to overlook. This is the so-called commercialisation of medicine and, more particularly, the commercialisation of the specialties. I do not intend to enter into a discussion of the facts underlying this remarkable innovation in modern medicine for it is not directly germane to the subject of this address and allusion has already been made to it in reference to the circumstances surrounding the recent and rapid development of specialism. We may, however, point out that our so-called charity hospitals, although originally founded solely for the destitute sick, have grown to such an extent that they now serve roughly four-fifths of the community. Their clientèle is now drawn from social strata which are to a large extent economically independent and yet they continue to conduct their work under the old statutes with a medical staff serving on a charity basis. This necessarily implies that the large numbers of the specialists required for their manning, and who receive no payment for their services, must extract their living from the small and the gradually shrinking proportion of the population who remain outside. Viewed in this light the development which has given rise to so much criticism by the public and so much misgiving in the profession is entirely economic in its origin. At the same time it should be pointed out that the specialist services of the large hospitals possess a large number of young men who are necessary for the charity machine, which they serve gratuitously, and who are often living during the best period of their lives in circumstances of great privation. This they tolerate largely because of the consuming interest of the work and partly in the hope of better days to come. Viewed on the average it is probably correct to say that the specialties are the most poorly remunerated section of the profession. It may be argued that much of the gravity of the hospital problem has sprung from the indifference with which the medical profession has allowed itself to be exploited. This is true but in this respect it has been no more culpable than the charitable public at large. Whatever the facts there can be no doubt that the problem alike in its public and its medical aspects can be solved only by a complete revolution in the hospital policy of the country.

I have permitted myself this short digression through a desire to show that the attitude of the public towards the profession has had more than one source, to which we have to direct our attention if we are to rehabilitate ourselves in the life of the nation. It is, however, no exaggeration to say that of these none is so significant as the general lethargy of the doctor in matters of health as distinguished

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* Abridged from the presidential address to the Edinburgh Obstetrical Society, delivered on Nov. 9th, 1932.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Jan. 17th.—5.30 P.M., GENERAL MEETING OF FELLOWS. 8.30 P.M., PATHOLOGY. Meeting at the Imperial Cancer Research Fund Laboratory, 8, Queen-square, W.C. Demonstrations. L. Savatard (Manchester): Specimens illustrating Intra-epithelial Spread of Carcinoma. J. A. Murray: Spontaneous ? Cure of Cancer. Melanotic Sarcoma of Choroid. Destructive Contribution to the Lymph-stasis hypothesis. W. Cramer and H. G. Crabtree: Effect of Inhibitors of Metabolism on Transplantability of Tumours. L. Foulds: Thymus Metastases of Filtrable Fowl Sarcomata. F. R. Selbie: Growth of Jensen Rat Sarcoma in Susceptible Rats. A. F. Watson: Tar Carcinoma in Rats. Apparatus for the Preparation of Carcinogenic Tars under Standard Conditions.

THURSDAY.—5 P.M., DERMATOLOGY. (Cases at 4 P.M.) Cases. Dr. G. Bamber: 1. Pityriasis Rubra Pilaris. 2. Arsenical Pigmentation and Hyperkeratosis. Other cases will be shown. 8.30 P.M., NEUROLOGY and PSYCHIATRY. Special discussion on the Mental and Physical Symptoms of the Presenile Dementias. Openers: Dr. Macdonald Critchley and Dr. George Riddoch: Neurology. Dr. R. D. Gillespie and Dr. T. R. Hill: Psychiatry.

FRIDAY.—5.30 P.M., PHYSICAL MEDICINE Discussion: Value of Physical Methods in the Treatment of Heart Disease. Openers: Dr. F. G. Thomson, Dr. B. T. Parsons-Smith, Dr. T. F. Cotton, and Dr. Geoffrey Holmes. 8.30 P.M., RADIOLOGY; OBSTETRICS and GYNÆCOLOGY. Special discussion on Radiotherapy in the Treatment of Non-malignant Gynæcological Conditions. Openers: Dr. N. S. Finzi (Radiology); and Mr. Malcolm Donaldson (with Dr. R. Moore Patterson) (Obstetrics and Gynæcology), followed by Dr. F. Hernaman-Johnson and Mr. Norman White.

HUNTERIAN SOCIETY.

MONDAY, Jan. 16th.—9 P.M. (at Cutlers' Hall, Warwick-lane, E.C.), Dr. Einar Thomsen (Copenhagen): Experimental and Clinical Studies of Gastric Juice (Hunterian Lecture).

CHELSEA CLINICAL SOCIETY.

TUESDAY, Jan. 17th.—(At the Hotel Rembrandt, Thurloe-place, S.W.), preceded by a dinner at 7.30 P.M., Discussion to be opened by Dr. H. T. P. Young on Character Defects in Young Delinquents.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, Manson House, Portland-place, W.

THURSDAY, Jan. 19th.—8.15 P.M., Dr. F. M. Burnet: Recent Work on the Nature of Bacteriophages; and Colonel F. P. Mackie, I.M.S. (ret.): The Technique of Bacteriophage Investigation as Used in India for Cholera and Dysentery.

ROYAL INSTITUTION, 21, Albemarle-street, W.

THURSDAY, Jan. 19th.—5.15 P.M., Prof. J B S. Haldane: Recent Advances in Genetics.

FRIDAY.—9 P.M., Sir William Bragg: The Crystals of the Living Body.

TUBERCULOSIS ASSOCIATION.

FRIDAY, Jan. 20th.—5.15 P.M. (at the London School of Hygiene, Keppel-street, W.C.), Prof. S. Lyle Cummins: Tuberculosis and the South African Native. 8.15 P.M., Dr. Philip Ellman: Pulmonary Asbestosis, Its Clinical Pathological, and Radiological Aspects, and Tuberculosis Risk.

SOCIETY OF MEDICAL OFFICERS OF HEALTH, Upper Montague-street, W.C.

FRIDAY, Jan. 20th.—5 P.M., Dr. G. A. Auden and Dr. F. C. Shrubsall: What do we mean by Mental Deficiency?

NORTH LONDON MEDICAL AND CHIRURGICAL SOCIETY, Royal Northern Hospital, N.

FRIDAY, Jan. 20th.—9 P.M., Mr. Kenneth Walker: Ourselves and Our Critics.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Jan. 16th, to SATURDAY, Jan. 21st.—NATIONAL HEART HOSPITAL, Westmoreland-street, W. Special Post-graduates Course in Cardiology. All day.

TUESDAY.—4 P.M., MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square. Lecture on Views on the Ætiology and Treatment of Peptic Ulcer, by Dr. Daniel T. Davies. (Free to Members and Associates.)

FRIDAY.—4.30 P.M. to 6 P.M., Demonstration of X ray Films of the Chest, Heart, and Intestinal Tract, by Dr. Peter Kerley. (Especially suitable to M.R.C.P. candidates.)

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, [illegible] W.

[illegible] M., Medical Wards, Skin Dept., [illegible] ns. 2 P.M., Medical, Surgical, Out-patients, Surgical Wards, [illegible] Lecture, Mr. Sinclair: Acute Appendicitis.

TUESDAY.—10 A.M., Medical Wards, Surgical Demonstration. 2 P.M., Medical, Surgical, Throat, Nose, and Ear [illegible] Operations. 4.15 P.M., Lecture, Dr. H. [illegible] Infections.

[illegible] Medical Wards, Children's Out- [illegible] Medical, Surgical, and Eye Out-patients.

THURSDAY.—10 A.M., Neurological Department, Fracture Demonstration. 2 P.M., Medical, Surgical, Eye, and Genito-urinary Out-patients. 4.15 P.M., Lecture Mr. Tyrrell Gray: Surgical Disorders of the Viscera.

FRIDAY.—10 A.M., Skin Department. 12 noon, Lecture: Therapeutics. 2 P.M., Medical, Surgical, and Throat Out-patients. Operations.

SATURDAY.—10 A.M., Throat Operations, Medical and Surgical Wards. Surgical and Children's Out-patients. The lectures at 4.15 P.M. are open to all Medical Practitioners without fee.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, Jan. 19th.—9 P.M., Dr. H. A. Lucas: Hay Fever and Allied Conditions.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, Jan. 17th.—3.15 P.M., Dr. E. G. B. Calvert: Modern Aids in Digestive Disorders.

ST. MARK'S HOSPITAL, City-road, E.C.

THURSDAY, Jan. 19th.—4 P.M., Mr. W. B. Gabriel: Appendicostomy: Indications, Technique, and Management.

LONDON JEWISH HOSPITAL, Stepney Green, E.

THURSDAY, Jan. 19th.—4 P.M., Dr. M. Schwartzman: X Ray Demonstration.

PRINCESS ELIZABETH OF YORK HOSPITAL, SHADWELL, E.

WEDNESDAY, Jan. 18th.—3.30 P.M., Prof. Leonard Findlay: Demonstration on Chorea.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Jan. 20th.—4 P.M., Mr. J. D. McLaggan: Giddiness.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital 49, Leicester-square, W.C.

TUESDAY, Jan. 17th.—5 P.M., Dr. G. B. Dowling: Seborrhœa. Seborrhœic Dermatitis.

THURSDAY.—3 P.M., Dr. I. Muende: Pathology Demonstration.

GLASGOW POST-GRADUATE LECTURES.

WEDNESDAY, Jan. 18th.—4.15 P.M. (at the Royal Maternity and Women's Hospital), Dr. S. J. Cameron: Obstetrical Cases.

Appointments

DODDS, R. L., M.B., M.Ch., B.A.O., F.R.C.S. Eng., has been appointed Assistant Obstetric Surgeon, City of London Maternity Hospital.

Certifying Surgeons under the Factory and Workshop Acts: DAVIES, H. G., L.R.C.P. Lond., M.R.C.S. (Llanid Montgomery); SQUIRES, F. V., M.B., Ch.B. Camb. (Wantage, Berkshire).

Births, Marriages, and Deaths

BIRTHS

BARNES.—On Jan. 8th, at Welbeck-street, W., the wife of F. G. L. Barnes, M.B., B.S. Lond., of Horton, Epsom, of a son.

BERTRAM.—On Jan. 7th, at a nursing home, the wife of Surg.-Lieut. D. Bertram, R.N., of "Gwynt," Wraxall, Bristol, of a son.

COLLYNS.—On Jan. 2nd, at Dulverton, the wife of Dr. P. C. Collyns, of a daughter.

GREEN.—On Jan. 8th, at Bromley Common, Kent, the wife of Dr. H. F. Green, of a son.

MILLER.—On Jan. 3rd, at Moniaive, St. Lawrence, the wife of Dr. A. K. Miller, of a son.

MARRIAGES

LOCKHART-MUMMERY—POLAK.—On New Year's Eve, 1932, quietly, in London, John Percy Lockhart-Mummery, F.R.C.S., of Harley-street, to Madame Georgette Polak, of Clive Court.

PRICE—STEVENS.—On Jan. 7th, at Holy Trinity Church, Brompton, Major Robert Bernard Price, R.A.M.C., to Daphne, only daughter of Mr. H. Stevens, of Herne Bay.

DEATHS

BEADLES.—On Jan. 3rd, at Gresham House, Egham Hill, Cecil Fowler Beadles, F.R.C.S., Pathological Curator, R.C.S. Eng., aged 66.

DONALDSON.—On Jan. 3rd, at Bridgford, Woodside-avenue, Muswell-hill, N., Prof. Robert Donaldson, M.A., M.D., F.R.C.S., aged 55.

HAMILTON.—On Jan. 7th, at Sutherland-avenue, Bexhill-on-Sea, George Hamilton, M.B., B.S.

MENZIES.—On Dec. 25th, at 25, Essendine-road, Maida Vale, W.9, James Menzies, M.B., B.S., M.R.C.S., L.R.C.P., eldest son of the late Dr. Duncan Menzies and Mrs. Menzies, aged 16 years.

PRICE.—On Jan. 4th, at Haydown, Amport, Hants, He Bankes Price, J.P., M.R.C.S., L.R.C.P., aged 67.

TYRRELL.—On Jan. 1st, at Kensington-mansions, S.W., Fran Astley Cooper Tyrrell, M.B., B.Ch. Camb., F.R.C.S. Ophthalmic Surgeon, aged 62.

WADDELOW.—On Jan. 3rd, at Whittlesey, near Peterborough, after a short illness, John Joseph Waddelow, F.R.C.S., J.P., in his 65th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

us the six-month period has a long run. The 08 Act directed every Maternity and Child Welfare thority to provide for the administration of the t and. where children were kept for reward. to point Infant Protection Visitors. In future one such Visitors must be a woman. and the Visitors e not only to satisfy themselves (and to give cessary advice and directions) as to the proper rsing and maintenance of the infants. but also to their health and well-being. The 1908 Act lowed the Authority to limit the number of children der 7 years old kept in any one house. The new ct substitutes the power to fix the maximum mber of children under 9 years old who may be pt in any dwelling where there is a notifiable ild; in addition. the Authority may impose nditions to be complied with. so long as the number ceeds a specified maximum. Formerly children pt by unfit persons or in unfit premises could be moved on a justice's or a local authority's order. future this will normally be done on a magisterial der obtained on complaint by a local authority. here is power to prevent the reception of a child s well as to remove it. This power operates not ly in the former conditions (if the premises are vercrowded. insanitary. or dangerous) but also if e infant is to be received or kept "in an environent which is detrimental." The grounds of unfitness the person who keeps a child for reward will clude. in addition to negligence. ignorance. inebriety. nmorality. and criminal conduct as before. old age. firmity, and ill-health. There is a new prohibition f anonymous advertisements offering to take charge f children under nine. And there is a more exact tatement of the hospitals. homes. and institutions xempt from the foregoing provisions. These exemptions are now limited to a hospital. convalescent ome. or institution (*a*) maintained by a Government epartment, local authority. or any other authority r body constituted by a special Act or Charter; b) exempted by certificate of the local authority;) voluntary homes supervised by the Home ffice; and (*d*) institutions. houses, or homes ertified or approved by the Board of Control nder the Mental Deficiency Acts in which there re no children or no persons who are not mental lefectives.

It will be appreciated that Part V. of the 1932 ct is merely that part with which the Minister of ealth is mainly concerned. The other Parts of hat is really a Home Office measure deal with uvenile courts, the trial of children, their criminal esponsibility. and their commitment to the care of t persons or to "approved schools," which will oon replace what we formerly knew as reformatory nd industrial schools. There are also new provisions s to juvenile employment. the notification. inspection, nd control of voluntary homes. probation. the nonssociation of juveniles with adults in police stations r criminal courts, and the suppression of young ersons' names. addresses or schools. or their pictures r other particulars of identity. where they are oncerned in proceedings in court or as witnesses. ost of these provisions are not yet in force.

THE K.D. AIR DRYER

THIS preparation is designed to remove moisture rom the normal air. The crystals are supplied in a etal box with a perforated lid which has a central lass window through which the crystals can be seen. ormally the crystals are dark blue in colour, but hen they become charged with moisture. so that hey will absorb no further water from the air, they urn pinkish. The air dryer should then be heated a moderate oven for one and a half hours, when the rystals will recover their original dark blue colour, nd be ready for further use in wardrobes, linen upboards, and other receptacles where rust and ould may do harm in the presence of a moist tmosphere. The invention is put upon the market y Elmesan (London). Ltd., 66. Victoria-street, .W.

THE PATIENT'S POINT OF VIEW

IN his latest commentary on yesterday, to-day. and to-morrow.[1] Mr. Stephen Leacock does not spare the medical profession. In the old days. he remarks. the doctor never talked medicine to the patient. Sometimes he suspected serious illness. but he never said so until recovery was complete; and though the therapeutic methods of those unscientific times may have been limited the practice of medicine was human. gracious. and kindly. "To-day," he says, "it is replaced by 'machine medicine' with the mechanical test. the scientific diagnosis. the hospital, the X ray. All this is marvellous. But no one has yet combined it with the Art of Healing."

The patient of to-day, Mr. Leacock thinks, is regarded by the profession merely as a contraption.

> "The Contraption sits huddled up in its serge suit in a consultation office chair. Its locomotive apparatus is doubled up beneath it, folded at the joints. The thing is anxious, but the doctor doesn't know that. The poor Contraption is consumed with something like panic that is gripping it by the feed-pipe. But it makes as brave a show as it can."

The doctor makes a running commentary on his investigations. "I don't know that I quite like that heart" . . . and "there are symptoms there that I don't like—don't like at all." (Neither does the Contraption, but he keeps quiet.) After further audible reflections on possibilities and probabilities he begins to write on little bits of paper. "Well." he observes. in cheering tones, "we'll try it out anyway."

> "And above all." concludes the doctor with a sudden burst of geniality that he had forgotten to use sooner, "don't worry. You may blow up at any time, but don't let that worry you. You may fall dead in a taxi, but I'm not alarmed if you do. Come back in a week and I'll show you the X ray plates. Good-bye."

After a week—168 hours, or 1080 minutes. or 64.800 seconds—the patient comes back to find his adviser beaming with interest. There is a misty-looking spot in the radiogram of the brain.

> "What is it?" asks the Contraption.
>
> "I don't know yet," the doctor says. "it's a little early to say. But we'll watch it. If you don't mind. I think we'll probably open your head and take a look. They are doing some wonderful things now in the removal of the brain. It's rather a nice operation. but I think I may take the risk. I'll let you know. Meantime you're following out our instructions. I hope—not eating anything?"
>
> "Oh no."
>
> "And nothing to drink or smoke?"
>
> "Oh no."
>
> "That's right. Well. now. in a day or two we'll know more. I'll have your blood by that time and the sections of your heart and then I think we'll begin to see where we are. Good-bye."

To learn the end of this illuminating story. readers will do well to consult Mr. Leacock's book.

A DIRECTORY OF MASSAGE

WE have received a Directory (dated August, 1932) of the Private Practitioners' Association. which is made up of members of the Chartered Society of Massage and Medical Gymnastics who are in private practice. Every entry in the Directory is of one who has qualified in massage and is registered with the C.S.M.M.G., while he may hold additional qualifications from this society, indicated by the appropriate letter. or the diploma of biophysical assistant from the Society of Apothecaries. A number of members are blind ex-Service men. trained at St. Dunstan's. It is also stated whether the member is willing to undertake National Health cases. The Directory is now arranged on an alphabetical basis of towns which makes it easy of reference. A copy will be sent post free to any medical practitioner on application to the hon. secretary of the Association, Mr. J. Stewart Brown. Hygeia. Falmouth.

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[1] Afternoons in Utopia. By Stephen Leacock. London: John Lane, the Bodley Head, Ltd. 1932. Pp. 240. 5s.

from his preoccupation with matters of disease. From this it has happened that there is being born in modern life much praiseworthy enterprise in health with which the doctor might have been identified to the advantage both of the nation and of himself, and largely in consequence of his failure to inspire and guide there have sprung into being movements of a quite different order in that, although often sincere in their ambitions and their claims, they are dangerous because they have allowed themselves to become dominated by obscurantism and prejudice.

Back to Hippocrates

What, then, must we do to assert ourselves and to take that place in the health affairs of the nation which belongs to us alike by prescription and by responsibility ? We have seen that devotion to disease has blinded us to the duties of health. We have failed to realise that the school of health is as essential as the school of disease. We have professors of disease. We must have professors of health.

I think I could easily persuade you that we must have in the forefront of our crusade the great fact of nutrition. Indeed, we must urge that this should become a dominating concern of every medical school at the earliest possible moment. Our professor of nutrition will inspire the rising generations of doctors with their larger duties to the public. Within his purview will come the child before and after birth, the observance of boyhood and girlhood and the adult in his various activities of relaxation, industry, and old age. Fresh air and sunshine and exercise will be his concern. He will be interested in the diets of different nations and their relative advantages. He will from his position of authority fulminate against the national peril inherent in our present milk-supplies.

We shall have a professor of public welfare in addition to our professor of nutrition. His special study will be those other factors in the community which are concerned with the safeguarding of the health of the worker, housing, hours of labour, industrial fatigue, &c. At Edinburgh University we have a professor of animal breeding. It has been well said that we bring all the resources of science to bear on the breeding and feeding of our pigs and have forgotten our men. Our professor will have within his ambit the great facts of heredity as these concern the welfare of man.

It is obvious at the outset that our curricula as at present organised cannot find room for the big new demands which we make on the teaching bodies. To objections on this score we can represent that the time has arrived in the history of medical teaching when it is essential that the conceptions responsible for the creation and perpetuation of the present curriculum should be completely revised. The curriculum which squeezes out instruction in such a vital subject as midwifery because of lack of space and yet which includes botany has surely outgrown its period of usefulness. The truth is that, as is now generally conceded, the time is over-ripe for a recasting of our methods of teaching to bring them into line with modern needs. In our approach to this admittedly complex subject our first duty is not a cheeseparing policy of hours here and hours there, but a consideration of the fundamental principles which must guide us towards the creation of a system that is in harmony with modern progress and that will embody and inspire our ideals of future development. Of a surety where our fathers faltered in ignorance we shall fail in the clear light of knowledge if we do not bend all our energies towards infusing the new system with the vision of a great profession dedicated to the service of health.

After assuring ourselves that by such means we have brought the schools into relation with the significance of health as a positive ideal immediately within their concern, we shall have gained much in a reorientation of medical thought and endeavour. We shall have done much to commit organised medicine to the view that the safeguarding of national health is at least as much its responsibility as the palliation of individual disease. Medical conscience, in its broadened outlook, will come more and more to regard disease in its many incapacitating forms not so much as lesions of individual organs each with its own ætiology, but in the main as a symbol of wrong living expressible in terms of nutrition or environment. It will find itself becoming more and more concerned with large matters of economic and social welfare, such as the housing, the feeding, and the work of the people and less with the bottle of medicine and the advice felt to be futile before it is uttered.

The new outlook must break completely with the traditional attitude that health merely represents disease that is prevented, the negative conception which is often found to dominate the utterances of members of organised medicine and which finds expression in the term "preventive medicine" as this is usually understood. The new conception must carry with it a robust conviction of positive virtue. The exponents of disease in their attempts at preventive medicine seek backwards from the morbidly deranged organ for a causation which becomes often more and more elusive the more intensely the search is pursued. The exponents of health look ever forward with a knowledge that the more clearly the principles of health are perceived and the more efficiently they are practised the more does the organism become attuned as a whole to its environment and the more irrelevant does the consideration of any one organ become. So long as the body is healthy the health of its parts is assured. After many long centuries during which it has strayed from the path first clearly perceived by the father of medicine our school will again be dedicated to the great classic ideal of health. Turning back to recapture the spirit of its youth it will inspire a renaissance in the principles of healthy living. *Mens sana in corpore sano—Floreat res medica.*

INFANT LIFE PROTECTION

NEW PROCEDURE IN FORCE

THE coming into operation on Jan. 1st of Part V. of the Children and Young Persons Act, 1932, tightens up the Infant Life Protection provisions of the 1908 Act in many respects. The previous law against baby-farming made it necessary to notify the keeping of children under the age of 7 for reward; the age is now raised to 9. Formerly notice was required within a certain period after reception; now it must be given in advance. Change of address must also be notified in advance, and notice of the death or transfer of the child must be given not only *to the local authority* but *also to the person from whom* it was received for reward. The old law exempted the keeping of children for less than 48 hours; this exemption is now cancelled. The contents of the notice are slightly amplified and there is a somewhat wider definition of "undertaking for reward." The old law allowed a time limit of six months for prosecution for failure to notify. This period was interpreted as running from the first day of failure; naturally, as the omission was often not discovered in six months, many prosecutions broke down. In future failure to notify is a continuing offence;

us the six-month period has a long run. The 08 Act directed every Maternity and Child Welfare uthority to provide for the administration of the t and. where children were kept for reward. to point Infant Protection Visitors. In future one such Visitors must be a woman. and the Visitors e not only to satisfy themselves (and to give cessary advice and directions) as to the proper ursing and maintenance of the infants, but also to their health and well-being. The 1908 Act lowed the Authority to limit the number of children nder 7 years old kept in any one house. The new ct substitutes the power to fix the maximum umber of children under 9 years old who may be pt in any dwelling where there is a notifiable ild; in addition. the Authority may impose nditions to be complied with. so long as the number ceeds a specified maximum. Formerly children ept by unfit persons or in unfit premises could be moved on a justice's or a local authority's order. n future this will normally be done on a magisterial der obtained on complaint by a local authority. here is power to prevent the reception of a child s well as to remove it. This power operates not ly in the former conditions (if the premises are vercrowded. insanitary. or dangerous) but also if e infant is to be received or kept "in an environ-ent which is detrimental." The grounds of unfitness n the person who keeps a child for reward will nclude. in addition to negligence. ignorance. inebriety. mmorality. and criminal conduct as before. old age. nfirmity, and ill-health. There is a new prohibition f anonymous advertisements offering to take charge f children under nine. And there is a more exact tatement of the hospitals. homes, and institutions xempt from the foregoing provisions. These exemp-ons are now limited to a hospital, convalescent ome, or institution (*a*) maintained by a Government epartment. local authority. or any other authority r body constituted by a special Act or Charter; b) exempted by certificate of the local authority;) voluntary homes supervised by the Home ffice; and (*d*) institutions. houses. or homes ertified or approved by the Board of Control nder the Mental Deficiency Acts in which there re no children or no persons who are not mental efectives.

It will be appreciated that Part V. of the 1932 ct is merely that part with which the Minister of ealth is mainly concerned. The other Parts of hat is really a Home Office measure deal with uvenile courts. the trial of children, their criminal esponsibility. and their commitment to the care of t persons or to "approved schools," which will oon replace what we formerly knew as reformatory nd industrial schools. There are also new provisions s to juvenile employment. the notification. inspection. nd control of voluntary homes. probation. the non-ssociation of juveniles with adults in police stations r criminal courts. and the suppression of young ersons' names. addresses or schools. or their pictures r other particulars of identity. where they are oncerned in proceedings in court or as witnesses. ost of these provisions are not yet in force.

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THIS preparation is designed to remove moisture rom the normal air. The crystals are supplied in a etal box with a perforated lid which has a central lass window through which the crystals can be seen. ormally the crystals are dark blue in colour. but hen they become charged with moisture. so that hey will absorb no further water from the air. they urn pinkish. The air dryer should then be heated n a moderate oven for one and a half hours. when the rystals will recover their original dark blue colour. nd be ready for further use in wardrobes. linen upboards, and other receptacles where rust and ould may do harm in the presence of a moist tmosphere. The invention is put upon the market y Elmesan (London), Ltd., 66, Victoria-street, .W.

THE PATIENT'S POINT OF VIEW

IN his latest commentary on yesterday, to-day. and to-morrow,[1] Mr. Stephen Leacock does not spare the medical profession. In the old days, he remarks, the doctor never talked medicine to the patient. Sometimes he suspected serious illness. but he never said so until recovery was complete; and though the therapeutic methods of those unscientific times may have been limited the practice of medicine was human. gracious. and kindly. "To-day." he says, "it is replaced by 'machine medicine' with the mechanical test. the scientific diagnosis. the hospital, the X ray. All this is marvellous. But no one has yet combined it with the Art of Healing."

The patient of to-day. Mr. Leacock thinks. is regarded by the profession merely as a contraption.

> "The Contraption sits huddled up in its serge suit in a consultation office chair. Its locomotive apparatus is doubled up beneath it, folded at the joints. The thing is anxious, but the doctor doesn't know that. The poor Contraption is consumed with something like panic that is gripping it by the feed-pipe. But it makes as brave a show as it can."

The doctor makes a running commentary on his investigations. "I don't know that I quite like that heart" . . . and "there are symptoms there that I don't like—don't like at all." (Neither does the Contraption, but he keeps quiet.) After further audible reflections on possibilities and probabilities he begins to write on little bits of paper. "Well." he observes, in cheering tones. "we'll try it out anyway."

> "And above all," concludes the doctor with a sudden burst of geniality that he had forgotten to use sooner. "don't worry. You may blow up at any time, but don't let that worry you. You may fall dead in a taxi. but I'm not alarmed if you do. Come back in a week and I'll show you the X ray plates. Good-bye."

After a week—168 hours. or 1080 minutes. or 64.800 seconds—the patient comes back to find his adviser beaming with interest. There is a misty-looking spot in the radiogram of the brain.

> "What is it?" asks the Contraption.
>
> "I don't know yet," the doctor says. "it's a little early to say. But we'll watch it. If you don't mind. I think we'll probably open your head and take a look. They are doing some wonderful things now in the removal of the brain. It's rather a nice operation. but I think I may take the risk. I'll let you know. Meantime you're following out our instructions. I hope—not eating anything?"
>
> "Oh no."
>
> "And nothing to drink or smoke?"
>
> "Oh no."
>
> "That's right. Well. now. in a day or two we'll know more. I'll have your blood by that time and the sections of your heart and then I think we'll begin to see where we are. Good-bye."

To learn the end of this illuminating story. readers will do well to consult Mr. Leacock's book.

A DIRECTORY OF MASSAGE

WE have received a Directory (dated August. 1932) of the Private Practitioners' Association. which is made up of members of the Chartered Society of Massage and Medical Gymnastics who are in private practice. Every entry in the Directory is of one who has qualified in massage and is registered with the C.S.M.M.G., while he may hold additional qualifications from this society. indicated by the appropriate letter. or the diploma of biophysical assistant from the Society of Apothecaries. A number of members are blind ex-Service men, trained at St. Dunstan's. It is also stated whether the member is willing to undertake National Health cases. The Directory is now arranged on an alphabetical basis of towns which makes it easy of reference. A copy will be sent post free to any medical practitioner on application to the hon. secretary of the Association, Mr. J. Stewart Brown. Hygeia. Falmouth.

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[1] Afternoons in Utopia. By Stephen Leacock. London: John Lane, the Bodley Head, Ltd. 1932. Pp. 240. 5s.

SIGHT-SAVING CLASSES

The provision of instruction for partially blind children was the main topic discussed at the annual meeting of the International Association for the Prevention of Blindness, held in Paris last month. The organisation of sight-saving classes and schools in England, America, and Germany was outlined; representatives of Switzerland and France, though they were able to record the existence of schools respectively in Zurich and Basle, and in Strasbourg and Paris, emphasised the need for multiplying classes in other towns in their countries. It was agreed that the special educational methods used in sight-saving classes produce results far superior to those which follow the attendance of partially blind children at ordinary schools.

THE WELSH NATIONAL SCHOOL OF MEDICINE

The stability of the Welsh National School of Medicine between the conflicting claims for its government has long seemed so uncertain that we welcome the confirmation of its present assured position in its first annual report. The compromise arrived at, which was embodied in a charter issued on July 1st, 1931, is that the school is recognised as a separate institution in the Federal University of Wales, and provides instruction in the clinical years of the curriculum. The preliminary sciences (first year) are taught in all four colleges of the university; most of the students, however, study these at the University College of South Wales and Monmouthshire at Cardiff. Second and third year subjects—anatomy, physiology, and organic chemistry—are taught only at this college. The medical students studying at Cardiff during their preclinical years work under the control of a joint academic committee of the college and school, over which committee the provost of the school presides. The entry of first year medical students has increased during the last four years from 28 in the session 1928–29 to 72 in the session 1931–32. It is noted that the resources of the preliminary science department together with those of anatomy and physiology are becoming insufficient to cope with the increased numbers, and unless these resources can be extended limitation of entry will be unavoidable. A valuable addition to the clinical material available for teaching has been the provision of 70 medical beds at the City Lodge Hospital of the Cardiff Corporation.

THE BREATH OF LIFE

We have been asked to review a little book with this title which can be obtained for 1*s*. 6*d*. through Messrs. Simpkin Marshall; it is written by Arthur Lovell, who, we learn, is the author of, among other works, "Volo or the Will" and "Ars Vivendi," and the inventor of a new method of breathing of which he says, "Physically it is the key to health," "Mentally it is the royal road to learning," and "Spiritually it promotes character, self-confidence, and aspiration for good." The inventor seems to have acquired, whether by reformed or deformed breathing, a certain measure of self-confidence. It may be that the medical profession exhibit astonishing ignorance on the subject of breathing and that "Mr. Emil Behnke" (whoever he may be) has been equally reprehensible; but we cannot subscribe to the view that the diaphragm is "the real core of vitality," nor advise the expenditure of 1*s*. 6*d*. on the book.

Vacancies

For further information refer to the advertisement columns

All Saints' Hospital for Genito-Urinary Diseases, Southwark, S.E. Clin. Asst.

Birmingham Maternity Hospital.—Hon. Obstet. S. Also Res. M.O. and Reg. £200.

Bradford Royal Eye and Ear Hospital.—Jun. H.S. £150.

Bradford Royal Infirmary.—Three H.S.'s. Each at rate of [illegible]

Brighton, Royal Alexandra Hospital for Sick Children.—H.S. £100.

Bristol, Southmead Hospital.—Res. Obstetric Officer. At rate of £200.

Bury Infirmary, Lancs.—Sen. H.S. At rate of £200.

Bury St. Edmund's, West Suffolk County Council.—Asst. County M.O. and Asst. School M.O. £500.

Canterbury Borough Mental Hospital.—Asst. M.O. £350.

Cardiff Royal Infirmary.—H.P. and H.S.'s. At rate of £50. Also H.S. to Ophth. Dept. At rate of £100.

Carlisle, Cumberland Infirmary.—Hon. Asst. Phys

Charing Cross Hospital, W.C.—Asst. Surgeon.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100. Also Registrar

Colchester, Essex County Hospital.—H.S. £175.

Denbigh, North Wales Sanatorium, Llangwfan.—Jun. Asst. Res. M.O. £250.

Derbyshire Education Committee.—Asst. School M.O. £500.

Dorchester, Dorset County Hospital.—H.S. At rate of £160.

Ealing Borough, Maternity and Child Welfare Services.—Second Asst. M.O. £600.

Eastbourne, Princess Alice Memorial Hospital.—H.S. At rate of £150.

Evelina Hospital for Sick Children, Southwark, S.E.—H.P. At rate of £120.

Exeter, Royal Devon and Exeter Hospital.—H.S. Also H.P. Each at rate of £150.

Hampstead General and N.W. London Hospital, Haverstock-hill, N.W.—H.P. At rate of £100.

Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.

King Edward Memorial Hospital, Ealing.—Jun. Res. M.O. £150.

Leeds Hospital for Women.—H.S. At rate of £100.

Leicester Royal Infirmary.—Surgical Dresser. 10*s*. 6*d*. weekly.

Lewisham Hospital, High-street, S.E.—H.P. At rate of £80.

Liverpool, City Infectious Diseases Hospitals.—Asst. Res. M.O. £200.

London Hospital, E.—Asst. Physician.

London Jewish Hospital, Stepney Green, E.—Second Radiologist.

Manchester, St. Mary's Hospitals.—Res. Obstet. O. for Whitworth-street West Hospital. £175. Also Three H.S.'s to Special Depts. Each at rate of £50.

Margate and District General Hospital.—Res. M.O. £150.

Middlesex County Council.—Ophth. S. £2 12*s*. 6*d*. per session.

Newark General Hospital.—Res. H.S. £175.

Newcastle-upon-Tyne, City and County of.—Asst. M.O.H. £750.

Preston and County of Lancaster Royal Infirmary.—Cas. O. At rate of £150.

Preston, Lancashire Mental Deficiency Acts Committee.—Asst. M.O. £600.

Putney Hospital, Lower Common, S.W.—Surgeon.

Rotherham Hospital.—H.P. £180.

St. John's Hospital, Lewisham, S.E.—Hon. Skin Physician. Also Res. H.P. and Cas. O. Each at rate of £100.

Salford, Hope Hospital, Pendleton.—Asst. Res. M.O. At rate of £250.

Shrewsbury, Eye, Ear and Throat Hospital.—H.S. £225.

Stoke-on-Trent, Longton Hospital.—H.S. £160.

Taunton [illegible] *l.*—H.P. £100.

Tilbury [illegible] £140.

Victoria [illegible] *Tite-street, Chelsea, S.W.*—Hon. Surg. Reg., H.P., and H.S. Each at rate of £100. Also Out-patient Anæsthetist. 10*s*. 6*d*. per attendance.

West End Hospital for Nervous Diseases, Gloucester-gate, N.W.—Sen. and Jun. H.P.'s. At rate of £150 and £100 respectively.

West London Hospit[illegible] O. At rate of £250. Also [illegible]

Western Ophthalmic [illegible] *N.W.*—Hon. Anæsthetist. One guinea a visit.

The Home Secretary is considering the appointment of Medical [illegible]
1925, f[illegible]
Nel[illegible]
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County
Court
almonth
[illegible] wquay, Penzance, Redruth, and
Districts (No. 59); Basingstoke
Farnham a[illegible] urt Districts (No. 51);
Birminghan [illegible] (No. 21); Bromsgrove
Bromyard, [illegible] ridge, Tenbury, and
Worcester [illegible] (No. 22); Redditch
County Co[illegible] Medical Referees f[illegible]
cases of ind[illegible] ophthalmic cases and
cases of beat hand, beat knee, or beat elbow: Accrington
Blackburn and Clitheroe, Blackpool, Chorley, Lancaster
Preston (No. 4); Bolton, Bury, Rochdale, Oldham, Salford
(No. 5); Leigh, Manchester (No. 8); Appleby, Brampton
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The Home Secretary is also considering the appointment of a Physician as Medical Referee under the Workmen's Compensation Act, for the Liverpool County Court District (Circuit No. 6). Applications from Physicians for the post should be addressed to the Private Secretary, Home Office, and should reach him not later than Jan. 28th.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Rothes (Moray), and Northampton (Northampton).

ADDRESSES AND ORIGINAL ARTICLES

MIGRAINE *

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MIGRAINE constitutes one of the most disabling of common maladies; but despite a vast amount of interest in the subject, we are still uncertain about its pathology, its nature, and its cure. Yet migraine has been the happy hunting-ground of the theorist, and the problem has been attacked by representatives of all branches of medicine. Each in turn has discovered in migraine phenomena pertaining to his own specialty; each in turn has hit upon the true nature of the malady; in turn, each has found the infallible remedy. Obviously, such mutually exclusive viewpoints cannot all be entirely correct, and the multiplicity and diversity of the hypotheses suggest that the problem is more complex than imagined, and probably one which presents a number of facets.

That the problem is many-sided is suggested by the wealth of the clinical aspect. In fact, one of the usual errors in describing and explaining migraine is to ignore the less typical though common forms which the malady may offer. It will be necessary at the outset to contrast the usual text-book account of the migrainous phenomena with the manifestations as they actually occur.

What is Migraine?

According to the common description, migraine is a paroxysmal affection comprising severe unilateral headache, preceded by visual phenomena and followed by nausea and vomiting. Undoubtedly, this account is sufficiently accurate to enable a large number of cases to be recognised, but it gives no hint of the occurrence of a far greater number of slighter and incomplete forms, nor of the rarer severe and even catastrophic manifestations. Detailed study of migrainous subjects reveals clearly that attacks may differ in degree and complexity in the same person; and with advancing years, as everyone knows, the attacks may alter and eventually cease to correspond with the classical description of the disease. Nevertheless, these slighter attacks must surely be merely variants of "ordinary" migraine.

Acting upon such clinical data, we may state that *any one of the classical symptoms* (teichopsia, headache, and vomiting) *may be absent.*

Migraine without visual phenomena is, of course, well known, but it is doubtful whether the frequency of such is appreciated. Out of Elliot's series of 300 cases, 18 per cent. complained of hemianopia and 25 per cent. of zigzags or fortification signs. Other alarming visual troubles were noted in 44 per cent., but some of these overlapped the figure for the two previous items. Our figures suggest that visual phenomena are even rarer, and it is possible that the percentages in Elliot's cases are higher because of the nature of the author's practice and experience. It must also be remembered that a large number of patients wake with a migrainous headache, and the visual excitation might have occurred during the sleeping hours.

Certainly nausea and vomiting are often absent, even though headache and visual symptoms are marked. In Elliot's series no nausea and vomiting occurred in one-quarter of the cases. Again, we would suggest that this proportion is too low.

Lastly, in a few instances, headache itself may be in abeyance. This is admittedly rare, and might legitimately cause diagnostic argument, were we not mindful of the occasional absence of headache in the elderly migrainous subject. Under treatment, moreover, the headache may be cured but not the other phenomena.

Advancing our argument further, we may even state that *any two of the classical symptoms may be absent*, and yet the diagnosis of migraine remains. Thus visual phenomena and vomiting may both be absent, the migraine attack being represented by headache alone. Cases of this type are, indeed, common. It may be asked how in such circumstances the diagnosis is made. The character of the headache itself is not without significance, and some of the accompanying disorders, such as confusion, irritability, anorexia, giddiness, photophobia, inability to "carry on," are features which distinguish it from other types of headache. A headache which leads to drowsiness and sleep is suggestive of migraine. The occasional occurrence of other phenomena—teichopsia or vomiting—during one of the patient's usual headaches also indicates the migrainous nature. One may summarise by stating that migraine is the commonest cause of severe periodic headaches, accompanied by prostration—especially if present in the early morning on waking.

If we grant that headache alone may represent a not uncommon type of migraine, we must also admit that vomiting alone and visual phenomena alone are both rare types of migraine. Again, diagnosis may be disputed here, but the periodic occurrence of visual symptoms alone in a migrainous subject is highly suggestive of an abortive attack. Bouts of vomiting alone may occur in younger subjects prior to the development of the complete forms of migraine, and also in the migrainous subject during pregnancy. For these and other reasons we affirm that attacks of vomiting alone may constitute a *forme fruste* of a migraine attack.

Characteristics of the Attack

It will be unnecessary to recapitulate the well-known features of the attack of migraine and to describe the various types of visual disorder which may be experienced. More useful perhaps would be a bare statement of some of the clinical points which are so striking as to demand an explanation in any hypothesis which may be advanced concerning migraine; and, furthermore, a correction of certain incorrect or exaggerated statements commonly made.

(1) *The headache is often not unilateral.* Although this statement challenges the very name of the malady, nevertheless careful introspection reveals that in a high proportion (perhaps even 50 per cent.) the pain does not strictly concern one-half the head.

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* The opening paper at a discussion at the Harveian Society on Dec. 8th, 1932.

The pain may be more intense on one side, without, however, any strict unilaterality. Pain may be noted in the frontal, parietal, or occipital regions; it may affect the summit of the skull; may occur in the temples or may be referred to one or both orbits. The location of the pain often varies from one attack to another in the same subject.

(2) *Attacks of migraine usually commence in youth and alter or diminish in intensity with advancing years, and may even cease altogether.* The general truth of this statement must not deceive one as to the rarer instances of true migraine appearing in childhood, and even commencing in middle life or old age. One hears at times that migraine ceases with the climacteric; this statement is not altogether correct. Actually the migrainous patient suffers an exacerbation at the menopause, and may continue to suffer alarming attacks for some time afterwards.

(3) The duration of the average attack of migraine, from the commencement of the visual symptoms to the disappearance of the headache, is a matter of some hours. One must remember that *unusually short and unusually long attacks may occur.* Thus we have known patients whose attacks from start to finish do not exceed 15 minutes. On the other hand, severe attacks of migraine may persist for a week, at the end of which the patient may be debilitated, exhausted, and irritable for another six or seven days.

(4) *Vomiting does not necessarily relieve the headache.* Despite statements to the contrary, we can definitely affirm that it is rather exceptional for an attack of migraine to be concluded, or the headache relieved, by the act of vomiting.

(5) *Migraine usually ceases during pregnancy.* This important statement holds true for the great majority of cases. The course of the pregnancy, however, is usually complicated by excessive vomiting.

Clinical Types of Migraine

When one reviews the symptomatology of a large series of cases of migraine, one is struck with certain broad similarities as well as with certain individual differences. The former constitute the general points of contact which make up our conceptions of migraine as a clinical entity. The individual features, however, are both interesting and important. When collected and sifted, they can be arranged into groups, each containing certain combinations of peculiar features. In this way we can isolate certain clinical subgroups, the ætiological and therapeutic significance of which are suggestive.

(1) *The bilious type.*—A type will emerge in which persistent vomiting dominates the picture. Ocular disturbance is slight or absent; headache is present but not severe. The vomiting is obstinate and may last three or four days; food is refused; collapse, loss of weight, and acidosis are often present towards the end of the attack. At times a slight icteroid tinge may be noticeable in the conjunctivæ; the patient may complain of abdominal discomfort or of pain. A slight rise of temperature at times has been noted.

(2) *Ocular type.*—Here the main symptoms are visual in nature. The attack commences with a series of visual experiences of a positive nature (fortification figures, zigzags), or of a negative character (scotomata, hemianopia). These may be accompanied or followed by an illusory distortion of vision, such as the apparent movement or obliquity of objects; diplopia; megalopsia or micropsia; optical alloæsthesia. A state of ocular vertigo follows, often accompanied by pain in the head or in the eyeball. Vomiting usually does not occur. The visual symptoms persist throughout the attack, dominating the picture. Examination usually reveals some slight and uncorrected refractive errors, often heteronymous in type; full correction of these errors often leads to marked relief.

(3) *Menstrual migraine.*—A very common sub-group is occupied by those cases of migraine in females, starting at the time of the first period, and regularly recurring with each succeeding menstruation. The migraine may accompany or closely precede or follow the period. Should the patient miss a period no migraine occurs. During pregnancy the migraine usually ceases, though vomiting may be excessive. At the menopause the migrainous symptoms are aggravated, but they cease with the complete cessation of the climacteric. Whether any structural peculiarities exist in these cases—as, for example, in the region of the sella turcica—is debatable. That special endocrine therapy is indicated in this type of case seems clear from practical as well as theoretical data.

(4) *The "cerebral type."*—A type of migraine in which intense headache, without visual or bilious accompaniments, is the all-important symptom, may perhaps be isolated. Sometimes a focal intracranial lesion is suspected because of the severity of the pain; the dramatic type of onset in some cases; the frequent localisation of the pain to one particular region of the cranium; the severe giddiness, restlessness, irritability, and photophobia suggestive of meningeal irritation. Attacks of this kind may be precipitated by sudden physical exertion, such as running up a station incline carrying a suitcase. Sometimes exposure of the bare head to sunlight ("heat-stroke") may be responsible. The sufferer often has some degree of hyperpiesis with or without arterial change.

An association with cerebral arterial disease is at once suggested, and one naturally asks whether such attacks might not constitute the pre-rupture symptoms of cerebral aneurysm. It is well known that the previous medical history of patients known to suffer from an aneurysm on the circle of Willis may be characterised by periodic "migrainous attacks." The following case is instructive:—

A man of 37 had been subject for 12 years to terrible bitemporal "migrainous" headaches, lasting hours or days. They would occur two or three times a year, and were always precipitated by business or domestic worries. He would disappear into a quiet room and try to sleep off the attack. There would be no vomiting and no visual disorder. In July, 1930, during a typical headache, he collapsed, lost consciousness, and was convulsed down the right side. On regaining consciousness a right hemiparesis with aphasia was found. Lumbar puncture revealed an evenly blood-stained cerebro-spinal fluid. Paretic signs persisted for some weeks.

About five months later the patient reported, according to instructions, at the casualty department, as he was suffering from another of his migraine attacks. Dr. A. Gilpin immediately performed another lumbar puncture and found a cerebro-spinal fluid which contained about 60 red blood-cells per c.mm.

Is it possible to isolate clinically a type of migraine associated with cerebral aneurysm? The inconspicuousness of teichopsia and vomiting is an important point, although visual phenomena have been described in the pre-rupture headaches. Adie believes that the consistency with which a unilateral headache appears on the same side is of importance; in other words, a headache which is left-sided in one attack and right-sided in another argues against the esence of aneurysm. Support is afforded by the monstration of other somatic disorders of developent, such as congenital heart disease, coarctation of e aorta, and skeletal anomalies. Albuminuria ay also be of possible significance.

(5) *Allergic migraine.*—Everyone is familiar with e conception of migraine as an allergic disorder, curring in families in which other allied affections cur. Without question, there are patients in whom igraine occurs in alternation with attacks of asthma, angioneurotic œdema, or of urticaria. Undoubtedly, so, migraine may develop during adolescence after childhood of cyclical vomiting. For these and other asons it appears clear that a type of migraine exists hich bears a close association with disorders of an llergic character. At the same time it must be mphasised that such cases are in the minority, and robably are too few in number to permit far-reaching onclusions as to ætiology or pathogenesis. We feel hat the case for the allergic nature of migraine has een overstated.

MIGRAINE MAJOR

The analogy between migraine and epilepsy has ften been made; the many points of contact between he two disorders serve as useful guides in clinical escription as well as suggestive features in ætiology. ust as we arbitrarily describe a major and a minor orm of epilepsy, so we may isolate a variety of migraine which from its severity and at times almost ramatic characters may be spoken of as "migraine major."

In this category belong the particularly severe xamples of the bilious and of the cerebral types, where the intensity and protraction of the symptoms may arouse doubt as to the original diagnosis. Differentiation will have to be made in such cases rom acute abdominal emergencies and from gross ntracranial disease. The accompanying prostration and loss of weight take these examples of migraine out of the category of a minor malady.

We must mention here those cases where neuro-ogical symptoms are present in striking degree. Thus mental confusion, the paraphasic speech defects, the feelings of numbness in the face or extremities, may be so marked as to suggest cerebral umour or thrombosis. Although these features are not rare even in minor forms, they may occasion difficulty in diagnosis when severe or protracted.

To the group of migraine major also belong certain complicating events of a severe and even alarming nature.

Status hemicranicus.—Occasionally a patient may emerge from a severe bout of migraine only to commence immediately another turn. In this way one attack may succeed another for as long as a month. Upon the analogy of the epileptic phenomenon the term "status hemicranicus" is applied. During this state the patient is never entirely free from headache, though it may fluctuate. Extreme physical and mental prostration may result; the patient may lose a stone or two in weight, and prolonged convalescence may be required. If subjective sensory disturbances occur during each attack, then objective sensory impairment of a hemiplegic distribution may be demonstrable.

This distressing state offers to the researcher an opportunity for clinical and biochemical investigation of the migraine phenomena. The results have been rather meagre, however. From the few facts which have emerged we know that the stomach is dilated, atonic, and immobile. Furthermore, we know—and this will surprise those who envisage in migraine the effects of intracranial hypertension—that the cerebrospinal fluid pressure is reduced, the composition of the fluid being normal. In this way the migraine symptomatology bears a resemblance to the post-lumbar puncture headache.

Migraine-epilepsy must be placed among the major manifestations of the disease. Not only can we trace an analogy between the phenomena in epilepsy and in migraine, but a closer association may at times be traced. Epilepsy may occur among the relatives of a migrainous subject; or epileptic and migrainous attacks may alternate in the same person; or epilepsy may cease and be replaced by attacks of migraine, the fits reappearing in later life when the migraine has abated. The term "migraine-epilepsy" is best restricted, however, to those cases where unconsciousness—with or without convulsions—occurs at the height of the migraine attack. In this way the visual phenomena and the headache act like a slow and prolonged aura. It is noticeable that when a migrainous attack culminates in unconsciousness, the headache is thereby entirely relieved and the attack cut short. Without the unconsciousness the attack would have dragged on for many hours or days, with vomiting and prostration.

The association between epilepsy and migraine is not a simple one. While it is true that epileptic manifestations at times appear in the personal or family history of a migrainous subject, the converse rarely applies. Thus it is distinctly unusual for genuine migraine to occur in subjects who are chronic or confirmed epileptics.

Migrainous neuralgia.—Sometimes the attack of migraine is accompanied and followed for some days by severe neuralgic pain in a limited area of the face or head. The patient may complain of severe pain localised to the eyeballs, the inner canthus, the side of the nose, temple, malar ridge, or mastoid region. Even the neck and shoulders may be affected. The pain may commence in the attack but persist for days or weeks after its finish. No objective sensory disorder can be demonstrated other than local tenderness.

In certain of these cases careful investigation reveals a condition of non-articular rheumatism, as betrayed by a tender nodule or thickening in the muscles or aponeurosis of the head and face. Tenderness along the course of an occipital or supra-orbital nerve may at times be present.

Persistent paralytic manifestations.—These constitute an interesting though uncommon series of phenomena. During the attack of migraine certain neurological signs may appear, and though becoming less noticeable when the attack has ended may not entirely disappear. With succeeding turns they reappear and eventually become permanently installed.

Pupillary inequality may be quoted as an example. The patient's friends may notice that during an attack one pupil becomes much smaller than the other. The difference becomes less noticeable between the attacks. In the course of time the anisocoria becomes permanent, and the patient may present a small inactive pupil on one side, with a normal mid-dilated pupil on the other.

Persistent hemianopia is another well-known sequel of chronic migraine. This defect may appear insiduously as a permanent feature, but more often it is ushered in abruptly at the height of an attack by an epileptiform seizure.

Most characteristic is the well-known ophthalmoplegic migraine, where a recurrent ocular paresis eventually becomes permanent. The third nerve is the one implicated in by far the greatest number of cases, but very exceptionally the fourth or the sixth nerves may be concerned.

Persistent hemiplegia, which may be accompanied by aphasia, has not infrequently been seen after chronic migraine. One patient in our series had suffered for many years from severe recurrent migraine, and later, in middle life, developed with some suddenness paretic manifestations down one side of the body. Similar cases might be quoted from the literature. The well-known Dr. Parry, of Bath, was a lifelong victim of migraine, and indeed wrote one of the classical accounts of this affection. In 1822 he died from the effects of a focal cerebral lesion with hemiplegia, aphasia, and agraphia. The evidence of the pathological data has shown that in these cases the lesions have been thrombotic in type. The coexistence of two such common disorders as migraine and cerebro-vascular disease would not attract attention were it not for the frequent story that the migraine in such cases has been associated with transitory symptoms of speech disturbance, numbness, and weakness affecting one side of the body—symptoms which have been made permanent by the cerebral thrombosis. In such cases one cannot but wonder whether the repeated migrainous attacks may not have so affected the structure of the cerebral blood-vessels as to have facilitated a terminal vascular accident.

MIGRAINE EQUIVALENTS

Pursuing the analogy with epilepsy a little further, we may apply the term "migraine equivalents" to those episodic events which occasionally seem to replace a true attack of migraine. Their nature is varied: they may comprise a period of mental confusion and a sense of unreality lasting for a few hours; a spell of giddiness or of nausea; paroxysmal tachycardia; tinnitus. The transient psychoses are the common equivalents, and naturally alternative diagnoses may be raised. According to J. M. Nielsen, it is necessary for the psychic disturbance to be of short duration (hours to possibly two days); to be unassociated with loss of consciousness; to be non-progressive in character; and not to lead to deterioration. It is highly important that true migraine must also be present, and there must be no evidence of hysterical or of epileptic tendencies. Lastly, the psychical state must be normal between the attacks.

The classic work of E. Liveing contains numerous examples of migraine metamorphoses, as he named these equivalents—including attacks of gastralgia, of angina pectoris, of gout, and of nocturnal laryngeal spasms.

The Migrainous Constitution

Investigation of a case of migraine comprises largely a minute study of the patient's symptoms, the factors of possible predisposing or precipitating significance, the personality of the victim in the widest physical and psychological sense, the record of previous illness, and, finally, the family history.

Physical examination is important, but occupies a secondary place. As in epilepsy, neurological "signs" are usually absent. Errors of refraction and of ocular balance must obviously be sought and corrected. Fundus abnormalities are not typically present; cardiovascular disorders are usually absent. Detailed information as to the physical habitus is lacking on an adequate scale, and herein lies a f for research which might prove of value.

Among the details of personal and family hist which seem of importance we might stress the frequ occurrence of migraine, more especially in a pare than in a collateral; the occurrence at times epilepsy and asthma among the relatives. Th personal study reveals often a young adult of highly strung, intellectual, or artistic temperament. (Th aspect has certainly been overstressed, for w encounter sufferers of all types of intellectual ability in all classes of the community and in all professions Quite often the sufferer is of the "bilious" type—i.e., one easily upset by dietetic excesses in childhood, and most characteristically one who is a poor sailor and readily becomes air-sick or train-sick. Numbers of migrainous sufferers cannot travel in trains, buses, or saloon-cars. Nothing characteristic has yet been determined as regards their appetite and thirst, their fondness or dislike for fats and sugars, &c.

Precipitating factors are extremely variable and individual. In perhaps the majority no clear-cut cause can be assigned to an attack; in some, two or three factors may be suspected; in a few only may a solitary precipitating factor be definitely traceable.

Among the commoner factors should be mentioned the psychological. Without doubt, the factors of suppressed rage and humiliation were operative in determining some of the attacks in certain of our patients. Prolonged stress of a psychogenic character is important, and the victims suffer intensely during a period of mental overwork and anxiety. Dietetic factors are rare, though we have encountered examples where the attacks have been invariably precipitated by a particular foodstuff. Over-eating may be responsible at times. On the other hand, hunger was found to be a commoner and more potent cause. The missing of a meal in the course of a busy day, unwonted exertion "on an empty stomach" are not uncommonly cited as causes of an attack. One person sustained his severest bout after deliberately avoiding food for 24 hours while continuing his usual work. The common early morning occurrence of migraine may perhaps be associated with the long period of gastric inactivity.

Physical over-exertion was blamed in a few of our cases, particularly when associated with hunger. One patient, an international rugger player, never had an attack except after a game of football. Perhaps, however, psychological factors crept in even here, because he tells us that "the attack is particularly severe when I have skippered the team; particularly if we lost the game; and particularly if I felt that the team did not play up as well as they should." The psychologist may well read the factors of "baffled humiliation and rage" between these lines.

Menstruation is, of course, an important precipitating factor, even in those women whose migraine is not of the menstrual type.

Eyestrain may at times be traceable in the immediate ætiology, and the front seats at a cinema, reading in badly lit rooms, or microscopy may occasionally be blamed.

Among the many circumstances which predispose to an attack, though not actually producing one may be mentioned defective ventilation, smoke-laden atmospheres, exacting brain-work, particularly under circumstances of stress or worry, late hours, broken and insufficient sleep, and intercurrent illness.

(*To be concluded*)

TUBERCULOSIS IN CHILDHOOD

ÆTIOLOGY AND PROGNOSIS AS SHOWN BY THE STOMACH LAVAGE METHOD OF OBTAINING TUBERCLE BACILLI *

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IN the "Handbuch der Kindertuberkulose" for 30 the present German view of tuberculosis is set rth by Herbert Koch, Epstein, Engel, Priesel, rfl, Liebermeister, Weise, and others, much of the tiology being based upon the well-known researches Ranke.[1] It may be summarised as follows.

After the initial introduction into the body of ubercle bacilli the patient enters the primary tuberulous state, which Ranke has described as characerised by an epithelioid type of tissue reaction naccompanied by allergy—e.g., hypersensitiveness to uberculin. This period varies from two to ten eeks, usually averaging about six weeks. The atient may now recover completely, healing taking lace by rapid calcification without the development f hypersensitiveness to tuberculin, or he may pass nto the secondary state, which is characterised by he rapid development of a high degree of allergy the intradermal tuberculin test showing a positive eaction to 0·1 c.cm. of 1/100 to 1/100,000 tuberculin). n the clinical side this "early" secondary state is ften associated with loss of weight, fever, dry cough, allor, and disturbances of the alimentary tract, hile radiography of the chest may show enlargement f the hilus glands and sometimes "focal" lung eactions. At the same time certain so-called parauberculous conditions, such as erythema nodosum, hlyctenular conjunctivitis, pleurisy, and benign nfiltration of the lung (epituberculosis) are apt to nanifest themselves. This early secondary allergic tate may heal by resorption or may progress, breaking lown the lymphatic gland defences to spread along he lymphatics or by the blood stream, and causing ither metastases or generalised tuberculosis (miliary tuberculosis and caseous broncho-pneumonia). This generalised condition is described as the *late* secondary state.

When recovery from the primary or secondary states occurs, there results a degree of immunity ; if reinfection now takes place, the resulting condition, known as the "third state," differs essentially from the two previous states. The high tissue immunity allows a localisation of infection to take place in the lung tissue ; if the glands become involved (which is less likely) the infection is chronic, and not acute as in the primary state ; fibrosis is a further evidence of high tissue resistance. This third state is adult "phthisis."

The American view, as expressed by Opie,[2] is, in the main, in agreement with that of the German school. It lays stress on the difference in the clinical picture between the tuberculosis of childhood and adult "phthisis," and makes it clear that these differences are due to a varying tissue response on the part of the individual. Opie points out, however, that the types of reaction are not dependent upon age, and that when a primary infection occurs in an adult the reaction is similar to that of the child undergoing a first infection. He considers the primary focus to be situated in the parenchyma, from which infection spreads to the corresponding hilus glands, an idea which is similar to that of the primary lung focus, as described by Ghon.[3] This conception has particular significance in this paper, since the presence of tubercle bacilli in the sputa of children in the primary state suggests a lesion in the lung tissue itself.

OPEN TUBERCULOSIS IN CHILDHOOD

Recently one of us (W. R. F. C.[4]), in a paper on the ætiology of erythema nodosum, showed that this condition follows infection either with the tubercle bacillus or the hæmolytic streptococcus, and is associated with a hypersensitive body reaction to the breakdown products ("endotoxins") of the organism causing the infection. In 3 out of 5 patients with erythema nodosum of the tuberculous type, tubercle bacilli were found in the stomach lavage. The publication of this report, following directly upon the work of Arvid Wallgren [5] and other workers in Europe and America who have called attention to the occurrence of "open" lung lesions in childhood, shed a new light upon the ætiology of tuberculosis in infancy and childhood, which it is the purpose of this paper to discuss. At the same time a number of inquiries have been made about the technical difficulties, value, and practical application of the stomach lavage method of sputum examination in childhood. An attempt will be made to answer these.

The stomach lavage method of detecting tubercle bacilli in sputum has been extensively used since it was first described by Meunier [6] in 1898. Many investigators have published results emphasising the occurrence of positive sputa in varying percentages of children examined. It is now evident that children in the *late secondary state* (generalised lung or miliary tuberculosis) are found more commonly than not to have tubercle bacilli in their sputa. Thus, Armand-Delille [7] claims to be able to demonstrate tubercle bacilli in 100 per cent. of such patients (see special technique in Appendix) ; Drucker [8] also found them in 100 per cent. of 19 infants under 1 year with definite signs of tuberculosis. Poulsen [9] found 100 per cent. of children under 1 year to be positive ; Opitz [10] found them in 8 of 11 children with advanced lung lesions ; Friedlander [11] obtained positive sputa in 7 out of 12 patients with tuberculous meningitis (both by culture and by guinea-pig inoculation) ; Opitz [12] in 7 out of 7 ; and we have found 3 out of 7 children with miliary tuberculosis or meningitis to have positive sputa. On the whole, the younger the child with generalised tuberculosis the easier it is to find tubercle bacilli in the sputum (Poulsen,[9] Delille,[7] Opitz [12]).

We come now to the *early secondary state*. There is evidence to show that this is also, though in a less degree, accompanied by tubercle bacilli in the sputum. Armand-Delille [13] showed that 60 per cent. of 500 children with only radiographical lung shadows to suggest the possibility of tuberculosis had bacilli present in the sputum, and that 3 out of 64 children examined simply as "contacts" were positive. Valdimar Poulsen [9] came to similar conclusions ; Camille Kereszturi [14] and her co-workers in America have demonstrated positive out of

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* The investigation was undertaken in the Research Department of the Hospital for Sick Children, Great Ormond-street, London, and was assisted by a grant from the Medical Research Council.

40 children with paratuberculous lesions (mainly pleurisy and phlyctenular conjunctivitis); Opitz[12] found 7 positive out of 9 children with "epituberculosis"; Wallgren[5] found tubercle bacilli in 17 out of 37 children with erythema nodosum with positive tuberculin reactions, and Philipson[15] reported the continuance of the above work by Wallgren, showing out of 96 children with erythema nodosum and positive tuberculin reactions 47 had tubercle bacilli in the sputum.

The Present Investigation

The present report consists of an analysis of the results of the stomach lavage in 70 children and infants under the age of 11 years (Table I.). The cases have been divided into five main groups:—

TABLE I

—	Condition.		Total.	Positive lavage (by guinea-pig inoculation).
A	Paratuberculous states		17	5
B	Contact cases..		17	1
C	Miscellaneous cases of suspected tuberculosis	Unresolved pneumonia	4	0
		Bronchiectasis ..	2	0
		Peritonitis ..	1	1
		Intracranial tumour	1	1
		Hæmoptysis (? mitral stenosis)	1	0
		Asthma	2	1
D	Military tuberculosis and meningitis		7	3
E	Control cases		18	0
	Totals		70	12

(*a*) Seventeen children showing *paratuberculous lesions*, such as erythema nodosum, phlyctenular conjunctivitis and pleurisy, together with X ray signs of focal lung reactions or enlarged hilus shadows. Five of the 17 yielded tubercle bacilli, as shown by guinea-pig inoculation. The pigs were killed after six weeks, and it may be that had they been kept longer, or had a double lavage been used (see appendix), more positives might have been obtained.

(*b*) Seventeen *contact cases*. These were children who had been recently exposed to infection from relations with open phthisis, and who gave positive tuberculin reactions but no other evidence of tuberculosis. One of these children was positive—namely, the sister of a child with erythema nodosum, who herself had had a positive stomach lavage. Both children were in contact with a brother who had phthisis (see history in section 2).

(*c*) Eleven *miscellaneous cases* suspected of tuberculosis in the wards of hospital by the physicians in charge. Three of these, a child with an intracranial tumour, a child with asthma, and a child with abdominal tuberculosis were positive.

(*d*) Seven cases of *generalised tuberculosis*. Three of these were positive.

(*e*) Eighteen *control cases*, consisting of children in whom there was no reason to suspect tuberculosis, most being negative to tuberculin. All gave negative results.

In Table II. the positive cases are set out in greater detail. The oldest child is 10 years, and the youngest 3 months; in fact, age seems to play little part in our results. It is interesting to note that the report of the radiologist (made independently) suggests an abnormal condition in every case, but does not always suggest tuberculosis. Our positive results occurred chiefly among children with paratuberculous lesions, as in the American investigation.[14]

Dr. Stanley Griffith, Cambridge, has been kind enough to type the last nine cases for us. Tubercle bacilli in all but one case were found to be human; the one bovine occurred in a child with abdominal tuberculosis.

TABLE II

No.	Disease.	Sex.	Age in Years.	Mantoux.	Guinea-pig result.	Type
1	Erythema nodosum ..	F.	$5^{5}/_{12}$	+	+	—
2	„ „ ..	F.	$3^{4}/_{12}$	+	+	—
3	„ „ ..	F.	7	+	+	—
4	„ „ ..	F.	10	+	+	Human
5	„ „ ..	F.	$2^{9}/_{12}$	+	+	„
6	Intracranial tumour ..	M.	5	+	+	„
7	Asthma	F.	$6^{6}/_{12}$	+	+	„
8	Caseous broncho-pneumonia	F.	$1^{1}/_{12}$	+	+	„
9	Tuberculous meningitis ..	M.	2	+	+	„
10	„ peritonitis ..	M.	$^{3}/_{12}$	+	+	Bovine
11	„ meningitis ..	F.	$^{6}/_{12}$	+	+	Human
12	Contact	F.	$5^{6}/_{12}$	+	+	„

The following two case reports illustrate several important points. Case 1 shows the importance of the recognition of erythema nodosum and other paratuberculous conditions as clinical evidence of primary tuberculosis, and the need in such circumstances of search for the source of infection. Case 2 demonstrates the value in diagnosis of the lavage method in doubtful cases of tuberculosis in childhood.

CASE 1.—Aged 10. Admitted to the Hospital for Sick Children, Great Ormond-street, with erythema nodosum. Family history: no history of contact with tuberculosis could be obtained. Personal history: acute rheumatism during the previous winter. Skin reactions: strongly positive both to tuberculin and hæmolytic streptococcal extract. Radiography: very definite hilus enlargement. In spite of the radiogram, Dr. F. J. Poynton inclined to the diagnosis of a rheumatic or streptococcal origin to the erythema nodosum. The stomach lavage, however, gave a positive sputum, proving the condition to be tuberculous in origin. Subsequently, examination of the brothers and sisters revealed the presence of an elder brother with unsuspected phthisis, with a cavity at one apex and a positive sputum; also in a younger sister, aged 5 years, stomach lavage revealed the presence of tubercle bacilli. In the latter physical signs were absent, radiography was indefinite, and the only symptoms were loss of weight though the Mantoux reaction was strongly positive.

This family demonstrates the importance, first, of the recognition of the significance of the paratuberculous conditions, and then of a thorough search for the source of infection.

CASE 2.—Aged 6. Admitted to the hospital suffering from asthma. She was suspected of being tuberculous because of her poor general condition, a family history of phthisis, and a history of tubercle bacilli being found in her sputum two years previously, on one occasion, at Brompton Hospital. Clinical examination and radiography were uncertain. Mantoux positive. Tubercle bacilli were cultured in the guinea-pig from the stomach washout.

Discussion

THE SIGNIFICANCE OF THE OPEN LESION

The results reported here, together with those of Armand-Delille, Wallgren, Opitz, et al., may be taken as proof of the existence of tubercle bacilli in the sputum of certain children. The percentage frequency with which positive sputa occur in the *primary* and *early secondary* states cannot as yet be exactly gauged. It is possible that most children passing through these states develop, for a short period, an open lesion. Wallgren's[5] observation that tubercle bacilli disappear from the stomach lavage in from two to eight months suggests that the period during which the lesion is open is of such comparatively short duration that it is unlikely to be detected, unless the condition is revealed by paratuberculous lesions. In our investigation all but one of the children with early lesions from whom tubercle bacilli were obtained revealed their condition to us by the coincident occurrence of erythema nodosum or phlyctenular conjunctivitis. The American figures[14] also showed a high incidence among children with paratuberculous lesions—i.e., 30 per cent. in children with, compared with 12 per cent. in children without—while it is significant that Wallgren[5] found 46 per cent. of his children with erythema nodosum to have open lesions. It is, however, quite clear from the results of other workers (Opitz,[12] Armand-Delille,[13] Poulsen[7]) that open lesions occur frequently among children with primary tuberculosis in the absence of paratuberculous lesions. It should not, therefore, be thought that open lesions are necessarily more common in children in whom the primary tuberculous state is associated with paratuberculous lesions, but rather that in these children they are more easily detectable.

The point of origin of these tubercle bacilli cannot be determined with certainty, since these children do not come to autopsy. The work of Ghon,[3] Blacklock,[16] and others, and some of the focal reactions demonstrated by Melville[17] in fine skiagrams suggest, however, that the primary lesion is in the lung parenchyma, and we may hazard the suggestion that the sequence of events is usually as follows: the child inhales tubercle bacilli, which are caught in the parenchyma of the lung; after some six weeks a focal reaction occurs in the lung and later in the glands draining the affected area; at this time tubercle bacilli may be found in the sputum in small numbers; two to four months later healing may take place by resorption, and the open lung lesion close so that tubercle bacilli can no longer be found in the stomach lavage. At present there is little evidence as to the actual frequency of these events. We may, however, quote the words of Armand-Delille, "Il semble que la lésion tuberculeuse est chez l'enfant plus souvent ouverte qu'on ne le pense classiquement."

THE PROGNOSIS OF CHILDREN WITH OPEN LESIONS

The question of prognosis in children who are shown by this method to have open lung lesions has not yet been completely settled. It is interesting to note that Bentley,[18] in an article on tuberculosis, recently stated that it is a "medical curiosity" to find a positive sputum in a child below the age of 10 years, and that when this does occur the prognosis is extremely grave. He was, of course, alluding to the bacilli found in the sputum by ordinary methods, and, as Armand-Delille[13] has shown, tubercle bacilli are only found in this way in gross lung lesions. It is, however, well known that children swallow their sputum, and we wish to make it quite clear that this sputum may contain tubercle bacilli from two different tuberculous conditions, those of the early localised and those of the late generalised secondary states described above. It is evident that many of the children in the late secondary state, where the infection is generalised and the prognosis hopeless, may be found to have tubercle bacilli in their sputum in sufficient numbers for detection by the ordinary method (direct microscopy of expectoration); to this extent we are in agreement with Bentley.

But it is to the existence of the early secondary state, where tubercle bacilli are not found in the sputum by the ordinary method, that we wish to call attention. The prognosis in these children, in our investigation, was good, and in fact no worse than in those in whom it was impossible to demonstrate bacilli. In from 6 to 14 months subsequent to the first positive stomach lavage none of our children have shown general symptoms of the disease, and in a follow-up of some 24 cases of paratuberculosis (erythema nodosum and phlyctenular conjunctivitis) occurring during the last four years at the Hospital for Sick Children, only three were found to have developed any frank tuberculous lesion. Other writers have given varying prognoses; the Norwegian, Engelsgaard,[19] quoted as high a figure as 50 per cent. of the cases developing frank tuberculosis after erythema nodosum; the Americans[14] stated that the children with positive lavage did only slightly less well in the Seaview Sanatorium, New York, than those with negative lavage; Wallgren[5] and Philipson[15] showed that bacilli disappeared from open lesions in Swedish children in from two to six months. It may be said that the prognosis varies with the treatment; all the children from this hospital were carefully supervised, and most of them went away for prolonged convalescence.

In this connexion the work of Borrel[20] on the French African troops in the war is of considerable importance. He showed that these men, who had not previously been exposed, and who came into contact with tuberculosis on arrival in France, reacted to the disease in a similar way to the European child. After the primary infection there was a period of three to four months during which they showed loss of weight, slight fever, alimentary disturbances, increased hilus shadows in the X rays of the chest, and strongly positive tuberculin reactions. At the end of this period they either recovered without further symptoms or the disease became generalised. The prognosis appeared to depend largely upon the treatment afforded during the three months subsequent to the primary infection. If during this period they were taken off heavy duty, given ample diet and rest, the prognosis was extremely good; if, however, they were allowed to continue the full rigours of a soldier's life the disease tended to overcome the body defence and generalise. Fuller investigations are necessary before it will be possible to gain a clearer idea of the prognosis of children with primary tuberculosis showing positive sputa; we may submit, however, that there is reason to suppose it to be good, provided suitable environment, food, fresh air, and rest are secured for them.†

The action to be taken in respect of these children necessarily raises the question of infectivity. There is, at present, no evidence that these children are infective; there is no known instance of one child with erythema nodosum having caused any other child to become infected, and in the school outbreaks of erythema nodosum in Scandinavia recorded by Albin Landau,[21] all the cases were traceable to one older child with open phthisis. It seems unlikely that sputum, which can only be obtained by special technique from the stomach, will ordinarily be a source of infection. There remains the possibility, as Philipson,[15] Valdimar Bie,[22] and Opitz[12] have emphasised, that during fits of violent coughing or sneezing in children with bad colds or coughs,

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† Since writing the above, Dr. J. W. S. Blacklock's report[16] has been published by the Medical Research Council. This investigation deals with 1800 consecutive post-mortems on children. Of these, 283 showed tuberculous lesions and 173 were considered to be due to primary tuberculous infections of the thoracic tissues; 90 per cent. of those cases which came to autopsy did so directly due to their tuberculous infection. This fact, combined with the comparative rarity of finding similar lesions at adult autopsies, has led Dr. Blacklock to assume that pulmonary tuberculosis is almost always fatal in the west of Scotland. This is a very different finding from our own and others quoted here, and suggests that there is something particularly unfavourably in the environment of Glasgow children acquiring tuberculous infection. It must be remembered, however, that he is approaching the subject purely from the pathological standpoint, and hence his results may not be altogether comparable with ours.

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Discussion

THE SIGNIFICANCE OF THE OPEN LESION

The results reported here, together with those of Armand-Delille, *Wallgren*, *Opitz*, *et al.*, *may* be taken as proof of the existence of tubercle bacilli in the sputum of certain children. The percentage frequency with which positive sputa occur in the *primary* and *early secondary* states cannot as yet be exactly gauged. It is possible that most children passing through these states develop, for a short period, an open lesion. Wallgren's[5] observation that tubercle bacilli disappear from the stomach lavage in from *two to eight months suggests* that the period during which the lesion is open is of such comparatively short duration that it is unlikely to be detected, unless the condition is revealed by paratuberculous lesions. In our investigation all but one of the children with early lesions from whom tubercle bacilli were obtained revealed their condition o us by the coincident occurrence of erythema nodosum r phlyctenular conjunctivitis. The American figures[14] lso showed a high incidence among children with aratuberculous lesions—i.e., 30 per cent. in children ith, compared with 12 per cent. in children without—hile it is significant that Wallgren[5] found 46 per ent. of his children with erythema nodosum to have pen lesions. It is, however, quite clear from the esults of other workers (Opitz,[12] Armand-Delille,[13] oulsen[7]) that open lesions occur frequently among hildren with primary tuberculosis in the absence of aratuberculous lesions. It should not, therefore, e thought that open lesions are necessarily more ommon in children in whom the primary tuberculous state is associated with paratuberculous lesions, but ather that in these children they are more easily detectable.

The point of origin of these tubercle bacilli cannot be determined with certainty, since these children do not come to autopsy. The work of Ghon,[2] Blacklock,[16] and others, and some of the focal reactions demonstrated by Melville[17] in fine skiagrams suggest, however, that the primary lesion is in the lung parenchyma, and we may hazard the suggestion that the sequence of events is usually as follows: the child inhales tubercle bacilli, which are caught in the parenchyma of the lung; after some six weeks a focal reaction occurs in the lung and later in the glands draining the affected area: at this time tubercle bacilli may be found in the sputum in small numbers; two to four months later healing may take place by resorption, and the open lung lesion close so that tubercle bacilli can no longer be found in the stomach lavage. At present there is little evidence as to the actual frequency of these events. We may, however, quote the words of Armand-Delille. "Il semble que la lésion tuberculeuse est chez l'enfant plus souvent ouverte qu'on ne le pense classiquement."

THE PROGNOSIS OF CHILDREN WITH OPEN LESIONS

The question of prognosis in children who are shown by this method to have open lung lesions has not yet been completely settled. It is interesting to note that Bentley,[18] in an article on tuberculosis, recently stated that it is a "medical curiosity" to find a positive sputum in a child below the age of 10 years, and that when this does occur the prognosis is extremely grave. He was, of course, alluding to the bacilli found in the sputum by ordinary methods, and, as Armand-Delille[13] has shown, tubercle bacilli are only found in this way in gross lung lesions. It is, however, well known that children swallow their sputum, and we wish to make it quite clear that this sputum may contain tubercle bacilli from two different tuberculous conditions, those of the early localised and those of the late generalised secondary states described above. It is evident that many of the children in the late secondary state, where the infection is generalised and the prognosis hopeless, may be found to have tubercle bacilli in their sputum in sufficient numbers for detection by the ordinary method (direct microscopy of expectoration); to this extent we are in agreement with Bentley.

But it is to the existence of the early secondary state, where tubercle bacilli are not found in the sputum by the ordinary method, that we wish to call attention. The prognosis in these children, in our investigation, was good, and in fact no worse than in those in whom it was impossible to demonstrate bacilli. In from 6 to 14 months subsequent to the first positive stomach lavage none of our children have shown general symptoms of the disease, and in a follow-up of some 24 cases of paratuberculosis (erythema nodosum and phlyctenular conjunctivitis) occurring during the last four years at the Hospital for Sick Children, only three were found to have developed any frank tuberculous lesion. Other writers have given varying prognoses; the Norwegian, Engelsgaard,[19] quoted as high a figure as 50 per cent. of the cases developing frank tuberculosis after erythema nodosum; the Americans[14] stated that the children with positive lavage did only slightly less well in the Seaview Sanatorium, New York, than those with negative lavage; Wallgren[5] and Philipson[15] showed that bacilli disappeared from open lesions in Swedish children in from two to six months. It may be said that the prognosis varies with the treatment; all the children from this hospital were carefully supervised, and most of them went away for prolonged convalescence.

In this connexion the work of Borrel[20] on the French African troops in the war is of considerable importance. He showed that these men, who had not previously been exposed, and who came into contact with tuberculosis on arrival in France, reacted to the disease in a similar way to the European child. After the primary infection there was a period of three to four months during which they showed loss of weight, slight fever, alimentary disturbances, increased hilus shadows in the X rays of the chest, and strongly positive tuberculin reactions. At the end of this period they either recovered without further symptoms or the disease became generalised. The prognosis appeared to depend largely upon the treatment afforded during the three months subsequent to the primary infection. If during this period they were taken off heavy duty, given ample diet and rest, the prognosis was extremely good; if, however, they were allowed to continue the full rigours of a soldier's life the disease tended to overcome the body defence and generalise. Fuller investigations are necessary before it will be possible to gain a clearer idea of the prognosis of children with primary tuberculosis showing positive sputa; we may submit, however, that there is reason to suppose it to be good, provided suitable environment, food, fresh air, and rest are secured for them.†

The action to be taken in respect of these children necessarily raises the question of infectivity. There is, at present, no evidence that these children are infective; there is no known instance of one child with erythema nodosum having caused any other child to become infected, and in the school outbreaks of erythema nodosum in Scandinavia recorded by Albin Landau,[21] all the cases were traceable to one older child with open phthisis. It seems unlikely that sputum, which can only be obtained by special technique from the stomach, will ordinarily be a source of infection. There remains the possibility, as Philipson,[15] Valdimar Bie,[22] and Opitz[12] have emphasised, that during fits of violent coughing or sneezing in children with bad colds or coughs, particularly whooping-cough, the bacilli may be expectorated. The elucidation of this point requires further study. At present we feel that these children should be treated as non-infective, and probably the ideal place for them to enter after prolonged convalescence is (in those above 3 years of age) the open-air school.

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† Since writing the above, Dr. J. W. S. Blacklock's report[16] has been published by the Medical Research Council. This investigation deals with 1800 consecutive post-mortems on children. Of these, 283 showed tuberculous lesions and 173 were considered to be due to primary tuberculous infections of the thoracic tissues; 90 per cent. of those cases which came to autopsy did so directly due to their tuberculous infection. This fact, combined with the comparative rarity of finding similar lesions at adult autopsies, has led Dr. Blacklock to assume that pulmonary tuberculosis is almost always fatal in the west of Scotland. This is a very different finding from our own and others quoted here, and suggests that there is something particularly unfavourably in the environment of Glasgow children acquiring tuberculous infection. It must be remembered, however, that he is approaching the subject purely from the pathological standpoint, and hence his results may not be altogether comparable with ours.

CONCLUSION

In conclusion, we submit that the recognition of the primary state, with its open lesion capable under correct treatment of early healing, is of the very greatest importance. We should like to emphasise the necessity for regarding all children with erythema nodosum, phlyctenular conjunctivitis, pleurisy, or benign infiltration of the lung (epituberculosis) as probably having open lung lesions. In the absence of any paratuberculous lesion, the diagnosis of the primary state remains very difficult, and can only be made by combining radiographical examination, skin reactions, a consideration of the general clinical condition, and the history of contact with open phthisis.

Appendix

INVESTIGATIONS BY PREVIOUS WORKERS

The following is a brief summary of reports already mentioned.

1. *Armand-Delille,*[7] of Paris, in 1927, examined directly homogenised stomach lavage—i.e., not cultured in the guinea-pig—and found 34 positives in 110 children suspected of tuberculosis. He divided his cases as follows : (*a*) Thirteen children with obvious clinical and radiographical evidence of tuberculosis—all positive. (*b*) Thirty-three children with only radiographic evidence—18 positive. (*c*) Sixty-four children examined as contacts—3 positive. (No ages given, no mention of paratuberculous lesions, no details of cases.) In 1930 he published[13] the results of the three following years' work. He says that in 500 cases the tubercle bacillus could be demonstrated in 100 per cent. of children with physical and radiographical signs of caseous bronchopneumonia, and in 60 per cent. of children with radiographical shadows suggesting tuberculosis. (No ages given, no mention of paratuberculous lesions, no details of cases.)

2. *Poulsen,*[9] of Copenhagen, in 1931, was able to demonstrate tubercle bacilli from stomach lavage injected into the guinea-pig in 53 out of 110 children. These children he arranged into age-groups, with the result that of 62 children below the age of 3, 41 were found to have open lesions, while of 48 over the age of 3, only 12 were positive. Poulsen is careful to explain that in Copenhagen all children under the age of 3 suspected of tuberculosis are sent to the children's hospitals, while those over 3 go to special tuberculosis wards ; in this way he accounts for the discrepancy in age results. Poulsen found that in the cases of 19 infants below the age of 1, 100 per cent. had tubercle bacilli in the sputum. He cites cases in which a definite diagnosis could only be made by this method. (No mention of paratuberculous lesions.)

3. *Drucker,*[8] of Copenhagen, in 1930, showed that in 19 children under 1 year of age who had a positive tuberculin skin reaction and radiographic shadows in the lungs, all had virulent tubercle bacilli in the sputum, obtained by stomach lavage.

4. *Wallgren,*[6] in 1931, demonstrated tubercle bacilli by stomach lavage and guinea-pig inoculation in 17 children with erythema nodosum out of 37 who had positive Mantoux reactions. He made the important observation that the sputa became negative, as shown by repeated examinations, in two to eight months.

5. *Philipson,*[15] in 1932, reported on the continuance of the above work by Wallgren after 100 children with erythema nodosum had been examined in this way. His results showed that of 96 who had positive Mantoux reactions, 47 were found to have tubercle bacilli in the sputum. His results have been graded into three groups depending on the increase of hilus shadows, with the result that group 1, with the smallest shadows, had 27 positive per cent. ; group 2, 43 ; and group 3, with the largest hilus shadows, 73 per cent. He also showed that the average length of time that the lesions remained open was two to six months.

6. *Opitz,*[10] in 1928, demonstrated the superiority of guinea-pig culture of stomach lavage material, and other fluids over direct microscopy or culture on Petroff's medium. In 33 sputa, 25 per cent. were positive by direct microscopy, 50 per cent. by Petroff culture, and 66 per cent. by guinea-pig culture. In 11 cerebro-spinal fluids from tuberculous meningitis, 60 per cent. were positive by direct microscopy, 64 per cent. by Petroff, and 100 per cent. by guinea-pig culture. In 6 pleural or peritoneal fluids none was positive by direct microscopy, or by Petroff, and 5 by guinea-pig culture.

Opitz,[12] in 1930, demonstrated tubercle bacilli in the stomach lavage by guinea-pig culture in 28 out of 30 cases of benign infiltration (epituberculosis) of the lung, in 1 out of 7 children with "interlobar pleurisy," in 3 out of 24 with "hilus tuberculosis," in 7 out of 7 with tuberculous meningitis, in 2 out of 6 with tuberculous knees, and in 1 out of 3 with enlarged cervical glands. In his children with epituberculosis he demonstrated bacilli at intervals of a few months for varying periods up to 2 years. Out of 42 positive results he only obtained 2 above the age of 4 years. Opitz considers the question of the infectivity of these children, and says that they may be infective during periods of severe cold or cough; he considers, however, that it would be a great mistake to expose them to superinfection by isolation with cases of phthisis.

7. *Keresztúri*[14] et al, in America, in 1932, examined 40 children in this way, all of whom were suspected of tuberculosis, and the majority having radiographic changes in the lungs. Seven of the 40 had tubercle bacilli in the sputum from stomach lavage, as follows : 2 in pleurisy with effusion ; 1 in pleurisy and phlyctenular conjunctivitis ; 2 in interlobar pleurisy with infiltration ; 1 in central infiltration ; 1 in spondylitis.

They point out that most of their positive cases had some paratuberculous lesion, though this in the case of interlobar pleurisy and central infiltration was only diagnosable by X rays. It was significant that 3 children with paratuberculous lesions, diagnosable without the use of X rays, gave positive results out of 10 such children, and that only 1 positive was obtained from a child who had no paratuberculous lesion whatever out of 30 such children. The average age of positive results was given as 4·4 years.

8. *Friedlander,*[11] in 1930, in Germany, examined the gastric lavage of 12 children with tuberculous meningitis. The sputum was grown on Petroff's medium, and also cultured in the guinea-pig. In 7 out of the 12 tubercle bacilli were found.

9. Bie,[22] in a small investigation on 12 children, Pirquet-positive, found 4 to yield tubercle bacilli in the stomach lavage grown on Petroff, and injected into the guinea-pig. All 4 of the children were below the age of 5 years. A number of Pirquet-negative children were all found to have negative stomach lavage.

TECHNIQUE OF THE STOMACH LAVAGE

This method, first described by Meunier in 1898, consists in making the child cough first thing in the morning, before any food has been taken, and then washing the stomach out with 200 c.cm. of normal saline. The centrifuged deposit is then injected into the guinea-pig, and the animal later killed for evidence of tuberculosis.

We have somewhat modified this technique, and now use the following :—

1. Two grains of potassium iodide are given three times a day for two days before the lavage.
2. The child is encouraged to cough first thing in the morning for 20 minutes.
3. He is then given 100 c.cm. of boiled water to drink.
4. Fifteen minutes later a stomach-tube is passed and as much fluid as possible withdrawn from the stomach.
5. This fluid is centrifuged and the deposit is treated with 1/10 antiformin (4 c.cm. diluted antiform being added to 100 c.cm. lavage).

More recently we have used a method suggested by Dr. S. Griffith, which consists in adding a 10 per cent. potassium hydroxide solution to the stomach lavage to make a final dilution of 1 per cent. This is allowed to act for an hour and then the whole is centrifuged. This method has the advantage of ensuring that the tubercle bacilli are not destroyed, but has the drawback that it leaves the deposit too thick for direct examination.

6. It is then injected under the skin in the abdominal region of the guinea-pig.
7. The guinea-pig is watched for six weeks, after which it is killed and examined for tuberculosis, both by direct smear of the diseased glands and by culture.

Dr. Stanley Griffiths thinks that guinea-pigs which do not show clinical evidence of tuberculosis should be left at least three months; if they die or are killed within six to eight weeks, cultures should be sown from the glands adjacent to the seat of inoculation, even when no lesions are visible. Opitz [10] says that when there were certain signs of tuberculosis he killed the pigs in five to six weeks, and that otherwise he left them for three months, and he also says [12] that he found it useful to test his guinea-pigs with tuberculin; those yielding positive skin reactions were killed at once—i.e., at the most after four to six weeks. Those negative he kept for three months before killing. We were only able to keep our guinea-pigs for six weeks, and it is possible that we may have missed a few positives. It is also of interest that Philipson has shown that by using the material from lavage on two successive mornings he was able to increase slightly the number of his positives.

The above method is comparatively simple, but requires the coöperation of a ward sister used to the handling of children. Herein lies a somewhat variable factor.

Armand-Delille has suggested a different technique which allows an immediate diagnosis if the finding of acid-fast bacilli is considered sufficient proof that the organisms are tubercle bacilli. The sputum contains so few organisms that a method of reducing the size of the centrifuged deposit by getting rid of as much of the mucus as possible is necessary before the bacilli can be seen in the direct smear. This he does by homogenisation as follows:—

1. Centrifuge the lavage in four tubes.
2. Place precipitates in porcelain dish containing 50 c.cm. of water.
3. Add 10 drops of normal sodium hydroxide solution.
4. Heat for ten minutes while slowly adding 50 c.cm. of water.
5. If specific gravity is over 1004 add a little alcohol.
6. Centrifuge liquid again for 45 minutes.
7. Stain by Ziehl Neelsen and examine for tubercle bacilli.

THE VALUE OF STOMACH LAVAGE

Little difficulty has been experienced in obtaining sputum by this method from every child. The majority of children appear to be excreting some small quantity of sputum, and this is normally swallowed. The technique of culture in the guinea-pig presents no great difficulty to the pathologist. Unfortunately at present the culture requires at least six weeks, and this, in many instances, robs the result of clinical value. Recently, however. Armand-Delille [13] has demonstrated tubercle bacilli in direct smears of the sputum obtained by stomach lavage using a different technique, while Ninni [25] is claiming that the injection direct into a cervical gland allows the diagnosis to be made in a week. In this present investigation we made use only of the method of guinea-pig inoculation.

The value of the test is very largely in its definiteness: a positive result means definite tuberculosis. All other methods of diagnosis—e.g., clinical examination, radiography, tuberculin reactions, &c.—however they may incline us to suspect a tuberculous condition of the lungs, fail to supply absolute proof. Delille [13] is emphatic on this point, and says:—

> "On ne saurait affirmer, en effet, qu'un enfant n'a pas de lésion pulmonaire tuberculeuse si on n'a pas fait cet examen; nous considérons même qu'on lui devrait accorder autant d'importance qu'à la radiographie."

We think, also, that the very great delicacy of the test should be emphasised. Armand-Delille [13] was able to show that direct examination of sputum obtained by tickling the back of a child's throat, did little more than demonstrate tubercle bacilli in cases of gross lung lesion—e.g., caseous broncho-pneumonia. His figures for direct examination of material from stomach lavage showed a greatly increased range of positive results; his final method of homogenisation again increased this range, so that it was now evident that the presence of even a few bacilli was being detected. From the work of Wallgren [5] and Opitz [12] it would appear that guinea-pig culture is a test of even greater delicacy, and it is certain that this last method, which we have adopted, may reveal the presence of bacilli in extremely small numbers. The superiority of guinea-pig culture over direct microscopy or growth on Petroff's medium is evidenced by the figures of Opitz [10]: in 33 cases of suspected lung tuberculosis 25 per cent. were positive by direct microscopy, 50 per cent. by growth on Petroff's medium, and 66 per cent. by guinea-pig culture. Opitz says:—

> "Wir sehen also dass das Kulturverfahren noch dann zum Nachweis von Tuberkelbazillen furhen kann wenn die mikroskopische Untersuchung in Stich lasst."

So far as we have been able to judge, the test is reliable; a positive result would seem to be proof of tuberculosis, as in no instance did a control case yield a positive result, and such autopsies as were obtainable in children who died in the secondary state revealed a primary focus in the lung parenchyma.

A negative result does not mean that tuberculosis is absent unless the lavage has been repeated several times, since the practical difficulties in obtaining the sputum by this method allow a considerable margin of error.

We may, therefore, say of the method that its definiteness, together with its delicacy and reliability, justify its use in any case of suspected lung tuberculosis in which a diagnosis is required.

We wish to express our gratitude to Dr. Stanley Griffith for his help and encouragement throughout this work. Our sincere thanks are due to the staff of the Hospital for Sick Children, Great Ormond-street, for allowing us to use and publish the cases here quoted. We also wish to thank Prof. T. W. T. Dillon for his help and advice with some of the foreign literature, and Mr. J. A. Swan for his technical assistance.

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HIGH BLOOD PRESSURE

THE PROBLEM OF ITS CONTROL

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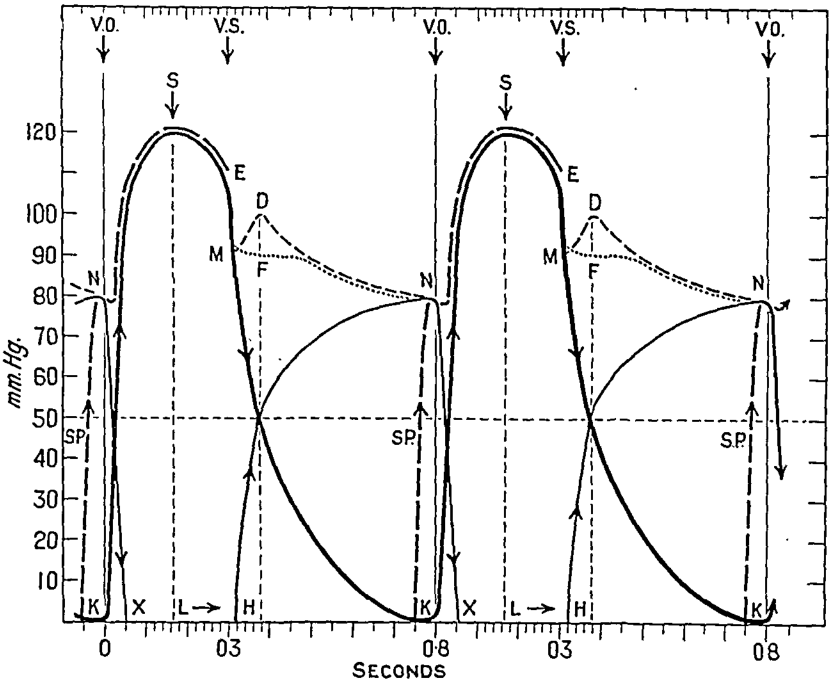
When, with the aid of a sphygmomanometer, the practitioner has come to the conclusion that his patient is "suffering from high blood pressure," at least three questions require answering: (1) Which factor or factors among those which are responsible for normal pressure are at fault? (2) Is it possible to control the erring factor? (3) Is control justifiable?

I venture to state that, owing to the chaotic character of present-day teaching, the solution of any one of these problems presents the greatest difficulty. Many prominent clinicians have suggested that high pressure may be of a compensatory character, and as such should not be unduly interfered with, although no definite theory has been advanced in support of their views. The attitude of many practitioners towards sphygmomanometry recalls that adopted to thermometry in my early days when, if pyrexia was discovered, it had to be reduced at all costs by so-called antipyretics. Fever is now viewed as an index of the combat proceeding between the natural protective powers of the body and the noxious agent and as beneficial in itself. I shall endeavour to give definite reasons why the time has arrived when hyperpiesis should be, at least to some extent, regarded analogously.

The paper represents an attempt to show the practical utility of the theory of an arterial systole which I set forth in a recent number of this journal,[1] and I am herein assuming that such a systole exists.

The complicated nature of the interaction between the various factors which promote blood pressure may be roughly illustrated as follows. During ventricular systole the factors concerned are: (1) rate; (2) volume; (3) force; (4) general arterial volume; (5) elasticity of arteries; (6) sectional area of arteriolar-capillary junction, and the "hydraulic head" representing the resistance of the capillaries and veins beyond; (7) frictional condition and extent of arterial endothelial surface; (8) viscosity of blood. During diastole, ventricular force is replaced by the "arterial systole" assisted by the elastic recoil which takes the place of the elastic resistance, these constituting the driving force. There are, therefore, eight factors during either phase, each of which may have at any time a plus, minus, or normal value. The combinations possible through the interaction of these values amount to many thousands and suggests a problem in higher mathematics, but fortunately I am dealing principally only with the effect which the modification of one factor has upon arterial pressure.

Fig. 1



Graph depicting two successive normal heart cycles (0·8 sec.). The upper composite line, NSEMDN, corresponds to normal intra-arterial pressure.
Thick interrupted line, SPNSE = ventricular systolic pressure, reaching maximum at S and ending E. Portion SP = presphygmic rise, which does not affect intra-arterial pressure, merely serving to force valves open at N. V.O. = opening of valves. V.S. = closing of valves.
Thick continuous line = elastic pressure due to varying volume of blood. Portion K (zero) to E = while ventricle is acting. E to M = immediately after valves close. M down to K = curve resulting from added arterial muscular compression, accelerating evacuation.
Fine dotted line, MFN = course which would be taken by thick line if no muscular compression was acting.
Thin continuous line = pressure on arterial contents due to muscular coat, starting at H (zero) after latent period L→H, rising to N, where it serves to hold valves closed while SP is rising. Then dropping sharply to X (zero).
Thin interrupted line, MDN = resultant pressure curve of added muscular and elastic effects. D = dicrotic wave. M = incisura.
Note that the vertical line dropped from D intersects elastic curve at 50 mm. Hg, and the muscular at 50 mm. Hg, the total forces acting on arterial contents at this moment being 100 mm. Hg.

Fig. 1 (reproduced from my former paper) illustrates how these factors coöperate. The "general volume" is for practical purposes taken as zero or the base line. The elastic tension depends on the contained volume, so the space between the line KSMK and the base may represent the "excess" volume at any moment. As the total systolic volume would not be evacuated without the assistance of HN in 8/10 sec. (according to my hypothesis) this could be represented by prolonging the line KSMFN to the right until it cuts the base line at the expiration of the time which a simple unaided elastic artery would take to dispose of all the added volume. The space between this line and the base might then be regarded as the total excess volume injected during systole. Its insertion would make the diagram too complicated. The "resistance" which comprises the three factors 6, 7, 8 will determine the position of the point N on V.S., so N may be taken as its index for practical purposes. It is obvious that any one of the three can therefore affect the pressure.

PECULIAR PROPERTIES OF ARTERIES

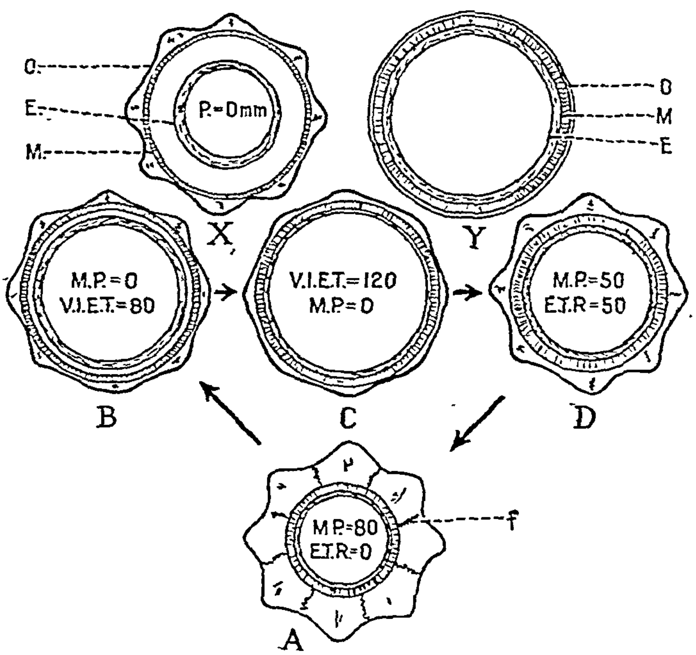
An artery may be considered to be made up of three tubes ensheathing each other—viz., inner elastic, middle muscular, and outer fibrous. Each tube has its own distinct physical part in the hydrodynamics of the circulation. Fig. 2 represents transverse sections of these "tubes" in their different stages of activity during the cardiac cycle. Figs. 1 and 2 are complementary to one another, and should be compared as my argument proceeds, especially as some of these stages do not follow the conventional lines but those of my former paper.

An elastic tube has its smallest diameter when fully relaxed. The amount of force available on recoil is practically equal to that required to distend it to any given diameter, and therefore depends on its contained volume at any time and the "quality" of its elasticity; otherwise it is inert. A muscular (involuntary) tube has its smallest diameter when fully contracted and its largest when relaxed, unless stretched. It is peculiar that if such a tube, when contracted, be forcibly dilated, it will suddenly relax. But if slowly stretched it will relax pari passu with the stretching force, or may even resist it. If it be *suddenly forcibly* stretched it will violently contract. Thus while an elastic tube will be always exerting pressure on its contents when above its normal diameter, a muscular one may be either compressing its contents or be completely relaxed, and have the same diameter in both cases. When contracting over an elastic tube its force will be added to the elastic tension (if any), but if the contraction pressure relaxes step by step, with increasing distension of the inner tube, it may offer no resistance nor add to the distensile force necessary, as would be the case if it were made of elastic material.

Fig. 2, X represents an artery with all its coats relaxed and its contained blood at zero pressure. The outer sheath is shown as an undulating line to indicate "slackness." Actually, of course, this puckering takes the form of transverse, not longitudinal ridges. Y is a vessel dilated to its maximum, which probably never occurs, as it would then function as a rigid tube, the outer coat being taut and acting like the network of cord which surrounds the second bulb of a perfume spray to prevent it from bursting. A is the state of affairs (shown in Fig. 1 at N) when the valves are about to open at the end of diastole. The inner tube is fully relaxed, as at X, and exerts no pressure, while the middle one is firmly contracted round it with a pressure of, say, 80 mm. Hg (Fig. 1, N on line HN). The next stage is B, immediately after the valves have opened, the middle coat relaxing, and the inner distended by ventricular systole up to 80 mm. (Fig. 1, between K and N). From now pressure rapidly rises to its maximum at C. The middle is stretched preparatory to the onset of its succeeding contraction. The elastic tension is, say, 120 mm., and the muscular pressure nil (Fig. 1, S). In D the middle is contracting on the inner, both pressures being equal and totalling 100. This is shown on Fig. 1 as the moment of the summit of the dicrotic wave D. The middle coat from now onwards helps to squeeze forward the blood, assisted by the elastic tension, until the position at A is reached once more; arterial volume is zero, and the inner coat is relaxed, so far as its elasticity is concerned.

There is also a peculiarity about the tissue intervening between the coats or "tubes." That between the inner and middle is areolar and non-elastic, whereas elastic fibrils are present between the outer and middle, running more or less horizontally across (A f). The only function I can assign to the fibrils is to assist the muscular coat to relax, as they would be useless otherwise unless concentrically arranged, like the inner coat. When the tunica media is contracted, they would be extended, as one end of the fibril is anchored to the external tough fibrous coat which in its turn is attached to the tissues contiguous to the artery. The other end is fixed to the periphery of the middle coat. On relaxation of the muscle, therefore, the recoil of the fibres would pull the circumference of the muscular coat outwards, assisting in its rapid relaxation, for instance when urgently required between stages A and B. This seems to be another point in favour of my views on an arterial systole.

FIG. 2



E.T.R.= elastic tension recoil. M.P.= muscular pressure. V.I.E.T.= E.T. due to ventricular injection. O., M., and E.= the three arterial coats (outer muscular, and elastic).

The general clinical conception of high pressure is that it necessarily depends solely on the amount of distension set up in the arterial walls and the quality of the elasticity, whereas, if the state of affairs represented at Fig. 1, N, or Fig. 2, A, is considered, this cannot be correct. During the whole of diastole, pressure may be due partly to muscular compression and partly elastic. Hence, if diastolic pressure be hyper-normal, both these factors must be taken into consideration. If diastolic pressure be raised, systolic must follow suit, and the muscular factor becomes one of great importance. For instance, suppose that an artery is over-distended during diastole to a pressure of 200 mm. Hg, and is in danger of rupture, it is an obvious advantage for its inner coat to be embraced by a muscular one capable of rhythmically contracting with a force, say, of 50 mm., which would thus reduce the strain upon the inner by this amount, and assist in the propulsion onward of its blood. But the effect of this would be to raise the intravascular pressure momentarily to 250 mm.; in other words, a clinical diastolic pressure of 250 mm. due to the combined effect is quite a different affair to one of 250 mm. arising from distension alone. Therefore, if a vago-depressant drug were to be given in the former case, it would aggravate the condition by handicapping the muscle. This can also be illustrated by lowering the curve HN on the graph, which would result in MK falling more gradually, so as to cut the vertical V.S. above zero, so entailing more ventricular force at the succeeding cycle in order to overcome the now distended artery, if the same volume is to be injected. In other words, pressure must rise.

I presume that I have made it clear that this muscular contraction has nothing in common with that very vague state of affairs denoted "spasm of the peripheral arterioles" which, text-books aver, sets up high pressure. Patients suffering from hyperpiesis may be divided into two classes. In one there is evidence of organic pathological change in the vascular tissues; in the other nothing can be found, at least with any means at present at the disposal of a practitioner. This latter group includes that which has, in accordance with the best professional traditions, been christened "essential hypertonia." I do not propose to enter into details regarding the structural changes brought about by disease, being here mainly concerned with the mechanical effect of such changes. Moreover, Prof. Plesch [3] has quite recently provided the readers of this journal with an excellent and comprehensive review of this aspect of arterio-sclerosis, in which, I am comforted to note, he comes to the conclusions regarding treatment which I arrived at years ago, when they were considered rank heresy. Suffice it to state that, in arterial disease, the physical or hydro*dynamic function of each coat is impaired in proportion* to its progress. Impairment of the musculosa implies a gradual lowering of HN, with a corresponding rise in MK, and as a result the general "distensile" pressure rises. What possible benefit can result from the administration of a "vago-depressant" or muscular paralysant under such circumstances? On the other hand, giving a vascular stimulant is like whipping a dying horse. In my experience, from the point of view both of effectiveness and of the patient's comfort, vago-depressants are worse than useless, at the most bringing about a temporary fall due to a general increase in the capacity of the circulatory "viscus."

ESSENTIAL HYPERTONIA

In essential hypertonia the conditions are somewhat different. Here I should feel inclined to name viscosity as the erring factor. One of the commonest cases of this type met with in general practice is climacteric hyperpiesis. I do not know whether systematic investigation has been made of the viscosity in these cases; if not, it might prove instructive. Where the red count is high, pressure often, if not always, follows suit; why not also the white? or both? While viscosity depends on the serum as well as the corpuscles, the former varies but slightly compared with the latter. It is significant that the normal variation of cat's blood, which has a viscosity three times that of water, may be 2·2 to 4 times.[4] Such variations may account for the familiar changes in the normal pressure readings during the day. Friction being inversely proportional to the velocity, and the rate of flow directly proportional to the driving power, it follows that, with increased velocity, greater driving force during diastole or systole will be required to overcome the resistance. At the "climacteric," muscular excitability is well known, hence the arterial muscular response to the stretching stimulus may be increased. *Consideration of the graph will show that increased* HN against increased resistance can reduce the arterial calibre to zero if HN be sufficiently high. Even if the latter remain only at its normal value, it will be of much service in controlling the distensile pressure which would in such a case certainly tend to rise. In both cases internal pressure at N would therefore be above normal (taken as 80 mm.). Thus in two cases, each with a clinical pressure of, say, 120 mm. at N, in that due to tunica media disease the formula might read for the pressure at N: musc. 40+elast. 80=120. For abnormal viscosity: musc. 80+elast. 40=120. Or again, if HN is sufficient to overcome R, which at N is 100, then musc. 100+elast. 0=100; normal being musc. 80+elast. 0=80. Thus in increased viscosity there are definite contra-indications to the exhibition of vago-depressants.

Therefore, summarising, I submit that the reasons I have given are sufficiently definite to enable me to state that in no case should the compressive power of the middle coat be artificially lowered or stimulated thoughtlessly, and that a careful distinction should be drawn between pressure due to rhythmic arterial muscular compression, and that due to simple elastic tension; and the respective shares which they have in the production of "high blood pressure."

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Egham.

IMMUNISATION OF THE MALTESE GOAT

BY MEANS OF CUTANEOUS VACCINATION

BY SIR THEMISTOKLES ZAMMITT, C.M.G., M.D.

AND

J. E. DEBONO, M.D.

(From the Public Health Department, Valetta)

IN a previous communication [1] under this heading we expressed the hope that a continuation of our observations would point the way to an effective protection of our goats against *Brucella melitensis* infection—the basis of our conclusion being the fact that we had succeeded in vaccinating a number of our goats to the point that they were able to withstand the subcutaneous injection of a virulent culture of *Br. melitensis* without developing an infection.

The favourable consideration of our report (which was embodied in the paper referred to) by H.E. the Governor of Malta was followed by his minute of Jan. 30th, 1931, authorising the continuation of our investigations, in consonance with which we recommenced work the first week of April, 1931, and carried on until the end of March, 1932.

PREPARATION OF VACCINE

A special avirulent strain of *Br. abortus* which had lost its power of provoking the formation of agglutinins was obtained from Dr. A. F. Huddleson of the Central Brucella station of the United States of America. This micro-organism was inoculated into flasks containing two litres of Huddleson's liver broth, which were then incubated (aerobically) for 28 days at 37° C., the resulting culture was filtered through a Chamberland candle, and the filtrate tested for sterility.

To ensure that this filtrate contained a sufficiency of the substance termed by Besredka "anti-virus," 20 c.cm. were transferred to a separate flask, and after the pH had been *readjusted to 6·8, reinoculated with the original strain of Br. abortus* and incubated aerobically at 37° C. For the next consecutive 15 days, 1 c.cm. was plated out daily on to agar. If *Br. abortus* failed to develop in the plates on any of these occasions, the filtrate was considered suitable for our purpose. The remainder of the sterile filtrate was then used to wash off the surface growth of *Br. abortus* from three-day-old agar tube cultures, in the proportion of 10 c.cm. to each tube.

This emulsion constituted the final vaccine which was put up in 2 c.cm. ampoules for use as required.

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[1] THE LANCET, 1930, i., 1343.

METHOD OF APPLICATION

Four separate 1 c.cm. doses of vaccine were injected *tradermally* into the udders of each goat. At the ne time the udders and the mouth were sprayed th the vaccine. These procedures were repeated week later.

No clinical reaction was noticed; the goats conued to feed and to milk normally. The outstanding vantage of the method is that no agglutinins are veloped in the serum as the result of the inoculation; nsequently, if a positive serum reaction occurs bsequently in a vaccinated animal it must be due a definite infection.

We had always in mind the probability of goats coming infected through contact with infected imals, whose excreta, loaded as they usually are ith *Br. melitensis*, are in fact bound to contaminate e food and the locality, and thus there is ample portunity afforded for the specific microbe to gain entrance through the abraded skin of the healthy imals. The importance of ascertaining the truth this assumption by practical test is obvious.

Our first step, therefore, was to select 11 healthy oats that had been kept a long time under observaion and vaccinate each by our improved method, nd then to evaluate the resistance of these vaccinated oats against the chances of natural infection as ompared with non-vaccinated animals under the same est conditions.

With this end in view we formed a herd comprising the 1 vaccinated goats and 25 goats condemned by the sanitary uthorities as infected with *Br. melitensis*, together with healthy untreated animals to serve as controls, and oused it in one of the stores at the Lazzaretto.

After 16 weeks of communal life the blood of the animals was tested for the presence of agglutinins, and it was bserved that while the vaccinated goats remained negative, ne of the controls showed a very definite reaction. At the nd of this period this goat was killed, and on post-mortem xamination it proved to be very heavily infected and all ts organs yielded colonies of *Br. melitensis*.

This preliminary experiment was satisfactory in so ar as it showed that we were correct in assuming hat a healthy goat might become infected by mixing with diseased animals. We had also proof that vaccinated animals could mix with infected ones with elative impunity. On the other hand, it was unsatisfactory in that the number of control animals developing the infection was so small. The result, we noted, can be easily explained by the hygienic conditions under which our goats were kept.

Ordinary herds are usually huddled together in narrow and badly ventilated rooms, the floors of which are heavily littered with contaminated excreta and food. In our case the animals were housed in a large vaulted store with wide open arcades overlooking a well-lighted yard, so that in spite of our attempts to imitate ordinary conditions by keeping the goats together, the chances of infection were reduced to a minimum.

In order to test the immunity afforded by our method of vaccination still further we next proceeded to try the effect of subcutaneous inoculation of a virulent culture of *Br. melitensis*.

On Sept. 2nd two of the vaccinated animals used in the previous experiment and two untreated healthy animals as controls were each injected subcutaneously under the skin of the udders with a dose of approximately 100 millions micro-organisms.

After five days, blood-serum from the control goats showed a positive agglutination reaction in dilutions up to 1/80 and 1/320 respectively. Of the vaccinated animals, one remained completely negative and the other yielded a weak positive reaction in dilutions up to 1/40.

The milk from each of the four goats was repeatedly examined, and numerous colonies of *Br. melitensis* were constantly obtained from the milk of the reacting control goats. In the case of the vaccinated goats, the one with the negative reaction never showed any growth of *Br. melitensis*, whilst the other on one occasion yielded two colonies.

At the end of 62 days all the animals were killed. At the post-mortem examination both of the controls were found to be heavily infected, *Br. melitensis* being isolated from the udders, inguinal glands, and spleen; whilst in neither of the vaccinated goats could any evidence be obtained of melitensis infection.

The subcutaneous inoculation of a virulent culture is admittedly a severe test of immunity and one on an altogether different plane from that afforded by the chances of natural infection; and yet even so the vaccinated goats showed a high degree of resistance. It seemed desirable, therefore, to utilise some other method of infection, midway in severity between actual inoculation with a virulent culture and exposure to natural contagion.

Further, as it has already been shown (Eyre, McNaught, Kennedy, and Zammitt,[2] Zammitt[3]) that the kids dropped by infected dams possess sufficient immunity to resist infection by *feeding* for at any rate several weeks, we decided to utilise this method.

Accordingly, between Sept. 28th and Dec. 12th, 1931, the nine vaccinated goats still remaining from our first experiments together with 12 kids born of infected dams at the Lazzaretto, and therefore naturally immune, and four healthy normal animals to serve as controls were fed on milk which had been heavily infected by the addition of large numbers of *Br. melitensis* from agar tube cultures. After the lapse of 38 days the blood-serum from each of the four control animals gave a strongly positive agglutination reaction against *Br. melitensis* in dilutions up to 1/110, 1/320, 1/80, and 1/160 respectively. These four animals were killed, and at the post-mortem examination on Feb. 2nd abundant colonies of *Br. melitensis* were obtained from all their organs. On the other hand, all the vaccinated goats and the kids were apparently unaffected, and their serum reactions remained completely negative.

RESULTS AND CONCLUSIONS

The result of these three experiments may be set out in tabular form thus :—

Expt.	Method of infection.	Controls.		Vaccinated.	
		Exp.	Inf.	Exp.	Inf.
1	Natural contact	9	1	11	0
2	Subcutaneous inoculation..	2	2	2	1
3	Infected food (milk) ..	4	4	{ 9 12 kids	0 0
—	—	15	7	34	1

Exp. = exposed; Inf. = infected.

N.B.—In the second experiment the infection of the vaccinated goat was very mild and might very easily have been transient only—since no micro-organisms were found on post-mortem examination.

We believe that these results show that our method of vaccination is sufficient to protect goats against the mild infection, which is the rule in goats under natural conditions; and we are confident that if the goats of these islands are treated as suggested (intradermal inoculation of the Zammitt-Debono vaccine) the spread of undulant fever can be effectively stopped.

Twenty-one animals, comprising 9 vaccinated goats and 12 kids born of infected mothers (which latter we believe to be naturally immune), now remain at the Lazzaretto.

Our recommendation is that these animals should be distributed amongst herds in the country where they would be subjected to all the natural risks of infection, and kept under close observation for a period of, say, 12 months. If, at the end of that time they still retain their immunity, the value of our method of immunisation will have been conclusively established. The value of the experiment would be enhanced if an equal number of uninfected healthy goats were mixed with the same herds to act as controls.

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[2] Reports Med. Fever Commission, 1907, vol. vi., p. 41.
[3] Jour. Roy. Army Med. Corps, 1908, x., 219.

Our best thanks are due to Dr. A. Critien, superintendent of the public health department, for having kindly placed at our disposal the P.H.D. laboratory, members of his staff, and the spare-rooms at the Lazzaretto. We have also to thank Dr. Huddleson for providing us with the special strain of *Br. abortus*, and to Surg. Lieut.-Commander Rainsford, R.N., for help during the investigation.

LYMPHADENOMA WITH RELAPSING PYREXIA

A CASE ASSOCIATED WITH ERYTHRÆMIA

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Mrs. A., aged 65, was first seen by me on Oct. 19th, 1927. She gave a history of first having had enlarged glands 12 months previously, when surgical removal had been advised and declined. Throughout 1927 she had been subject to attacks of fever, which occupied from three to five days in every fortnight, the maximum temperature being usually 102° or 103° F. (Fig. 1). The febrile period was always accompanied by breathlessness and heavy sweating, d left her feeling weak, but in the intervals she ained strength and felt well until the next attack. e stated that, apart from the febrile periods, she ad felt much better since a course of treatment by arsenic and X rays, and had required no medical advice *or treatment for several months.*

When seen, she was a well-nourished, rather pale woman with enlarged glands in the left axilla and in the left abdomen. There was no enlargement of the liver or spleen, and no clinical evidence of enlargement of the mediastinal glands. No subcutaneous nodules or hæmorrhages were present, and there was no history of hæmorrhages, except conjunctival. Her temperature was 102°, but next day it was normal and on the 21st subnormal, when she felt well and got up in her room. On the 22nd she had a relapse and the temperature touched 102° again. This, however, was exceptional, her febrile attacks from that time onwards until the terminal stage of her illness being spaced as she had described them; fortunately she had preserved her earlier temperature charts (Fig. 1). On Oct. 29th, when she was feeling well, her blood was examined by Dr. H. M. Galt, who reported :—

Red cells	7,410,000	Polymorphs	31%
White cells ..	13,100	Lymphocytes ..	67%
Hæmoglobin ..	112%	Eosinophils	2%
Colour-index ..	0·8		

In the stained films the red cells were normal in shape, size, and staining reactions.

This was an unexpected result, which was corroborated by a further count taken on Nov. 5th when she was in her next febrile attack.

She was placed under the care of Dr. W. Barrington Prowse for actinotherapy and was given arsenic by mouth and by injection in the form of sodium cacodylate, and various symptomatic remedies were employed in the hope of preventing the febrile attacks. None of them had the slightest effect, and the intermittent attacks of fever continued up to the terminal continuous pyrexia.

In December she saw Sir Thomas Horder, who wrote to me on the 16th saying that he agreed with the diagnosis of lymphadenoma.

During the ensuing weeks the external glands diminished steadily, until by Jan. 10th those in the axilla had disappeared, and on Feb. 2nd, when I had an opportunity of examining her in bed, the abdominal mass was no longer palpable. On March 24th I saw her after an interval of a month, when she told me that her last two attacks of fever had been more severe than usual, and had been accompanied by intense drowsiness. She was on that date up and about, and looking comparatively well.

On April 24th I saw her again, and for the first time felt the spleen. The liver was not enlarged; there were still no external glands to be felt, and the air entry was free and equal over the whole area of both lungs. She was persuaded to start a second course of sodium cacodylate injections. Her febrile attacks were now definitely more severe, so much so that on occasions she sent for me at the time, and I have notes of 103·6° F. on April 27th, 104° on May 21st, and 104° on June 6th, when the spleen had enlarged further, and glands were palpable for the first time in the right axilla. During the whole of this time she was up and about, leading a more or less ordinary life, refusing to give in to her malady, and even during the febrile periods by no means always staying in bed, having from long previous residence in India got into the way of disregarding what she considered (and there was no object in disillusionising her) as no more than the "fever" to which she had been accustomed in the past. It appeared now that fever in some degree was becoming constant (Fig. 2).

Dr. A. Salusbury MacNalty's report for the Ministry of Health on "Investigation of Lymphadenoma with Relapsing Pyrexia," strongly appealed to her when she was told that she was the subject of a rare type of a rare disease of sufficient importance to have been made the subject of a government research, and for the first time I was able to keep her under something approaching continuous observation. The spleen steadily increased in size, but not the external glands, although she had had no exposure to X rays since March 23rd. There was deep resistance in the abdomen in the middle line over the vertebral column, and she was troubled by bronchial catarrh, which appeared to indicate intrathoracic pressure, although clinically I could make out no dullness, and air entry was equal. She began to lose weight and strength, but on June 19th she drove up to the County Hospital and had a fifth and last blood count from Dr. Galt. This showed the same blood picture, although she was then in the terminal stage of her disease. Pyrexia was now practically continuous, and enlargement of the spleen was constant. It was, however, not until July 1st that she first complained of pain in the region of the spleen. On July 16th anasarca of the lower limbs developed. She then went rapidly downhill and died on July 21st, 1928, at the age of 66 years and 1 month.

The oldest patient with this disease in cases previously on record is said by McNalty to be a woman aged 54 years, and in his monograph[1] I find no blood counts at all comparable with those of this patient, although he has collected all cases published in the literature up to 1928. Details of the

Date.	Hg.	Red cells.	White cells.	C.I.	*Differential count.*		
					Polymorphs.	Lymphocytes.	*E.M.T.
	%				%	%	%
31/10/27	112	7,410,000	13,100	0·8	31	67	(*a*) 2
5/11/27	108	6,690,000	14,800	0·8	54	46	—
12/12/27	100	6,360,000	10,200	0·8	67	30	(*b*) 2 (*c*) 1
27/3/28	94	5,060,000	5,500	0·9	56	43	(*a*) 1
19/6/28	102	7,300,000	9,300	0·7	69	30	(*a*) 1

*E.M.T. =(*a*) Eosinophils. (*b*) Large mononuclears. (*c*) Transitionals.

In all five examinations the red cells were reported normal in shape, size and staining reactions.

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[1] Ministry of Health Reports on Public Health and Med. Subjects, No. 50. London, 1928.

blood counts by Dr. Galt are given in the npanying Table.

POST-MORTEM EXAMINATION

post-mortem was made at the Royal Sussex ıty Hospital on July 22nd by the late Dr. J. W. per.

e body was that of an elderly woman and, though y nourished, was by no means emaciated. There no unusual pallor of the skin, and the colour of the nal organs, mucous membranes and body fat gave no ation of anæmia. The finger-nails, lips and ears were erately cyanosed. No enlarged glands were visible ılpable in the neck, axillæ or groins. The *heart* showed erate dilatation of both ventricular cavities, but no rtrophy. There was a liberal deposit of fat over the rior surface, the heart-muscle was flabby, and beneath endocardium and on the cut surface of the myocardium e were distinct striæ of fatty deposit. Microscopical nination showed fatty infiltration, with cloudy swelling fragmentation of the muscle-fibres. The valves of the t, the aorta and the coronary arteries were healthy. blood had the normal deep red post-mortem colour, was clotted to a normal degree, the coagula being, ever, rather soft. There were no signs of capillary iorrhages in any of the organs or mucous membranes. he *liver* was enlarged, fatty and congested, with an ınced "nutmeg" appearance. The spleen was large very soft. Except for congestion of the bases the *lungs* e healthy, as were also the *kidneys*, *adrenals* and *pancreas* the whole of the *alimentary tract*. A careful search for erplasia of Peyer's patches and the solitary follicles was e negative. There were a few small subserous fibroids a pedunculated polyp of the body of the *uterus*, but erwise the pelvic organs were normal. The weights the chief organs were as follows: heart 11 oz., right g 15 oz., left lung 16½ oz., liver 72 oz., spleen 32 oz., ıt kidney 6 oz., left kidney 4½ oz. The brain and spinal l were not examined.

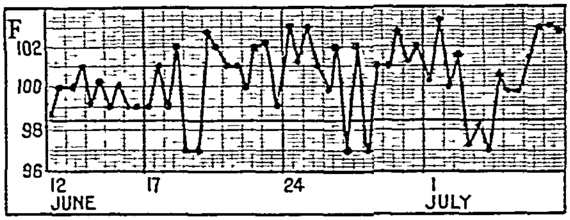
ymphatic glands.—The axillary, bronchial and retro-itoneal glands were enlarged, but the cervical and inguinal nds were not affected. In the right axilla there were e small glands and one larger one about the size of a nut. In the left axilla there were eight enlarged glands, h about the size of a small bean. All the axillary glands eared to be in a more or less early stage of the disease, l were buried deep against the thoracic wall. The arged glands in the thorax were practically confined the root of the left lung, around and below the left nchus, and had a total weight of 6 oz. The largest ss of glands was in the abdomen, extending from the ncreas to the bifurcation of the aorta, and weighing oz. No pressure effects from any of these masses were scernible.

The macroscopic appearance of the glands conformed in e main to the description of Hodgkin's disease. They were l discrete, with thickened capsules, and without any sign periglandular infiltration. There was not the slightest ıggestion of caseation or suppuration. The masses of ands were held together by inflammatory adhesions in e surrounding connective tissue. The smaller glands ere of a uniform dull pink colour, and were notably elastic ı consistency. The largest of the glands had a variable exture in different parts, elastic pink portions being admixed ith soft hæmorrhagic areas and firm white patches. A w of the smaller glands were of a dead white colour and rm consistency. In none of the glands were there any f the greyish translucent areas, or yellowish patches, ommonly described.

Sections of two of the glands were made and their histo-gical characters confirmed the diagnosis of Hodgkin's disease. One of the pink glands showed the typical replacement of the lymphoid tissue by hyperplasia of the reticulum, many of the cells of which were of the usual "lymphadenoma" type. The section of one of the firm white glands showed simply a mass of hyaline fibrous tissue containing but few cells.

The *spleen* was much enlarged but maintained its normal shape. The capsule was only slightly thickened and, as peritoneal adhesions were entirely absent, the organ was easily removed. It was very soft, indeed friable. The colour of the cut surface was a mottled mixture of irregular white areas, varying in size from a pin's head to a pea, with the intervening deep red congested splenic pulp. On microscopic examination the white areas showed an excessive proliferation of endothelial cells, arranged in alveoli separated by a fibrous reticulum, no spleen tissue proper being visible.

Fig. 2

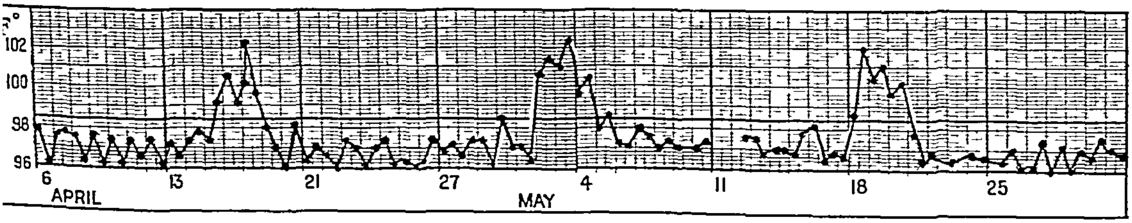


Temperature chart in June and July, 1928. Terminal type of fever.

The *bone-marrow*, taken from the middle of the shaft of the femur, was of a chocolate colour, similar to that found in other conditions in which the erythroblastic functions of the tissue have been subject to prolonged stimulation. Smears of the marrow, stained by Knyvett Gordon's method, showed abundant normal red blood-cells and a fair number of normoblasts, but no megaloblasts. There were large masses of lymphocytes, but neutrophil leucocytes were comparatively scanty, and only an occasional eosinophil and basophil were present.

The outstanding features of the post-mortem examination in this case were the absence of anæmia and emaciation, the absence of visible or palpable subcutaneous lymphatic glands, the marked enlargement and soft character of the spleen, and the response of the bone-marrow.

Fig. 1



Temperature chart during April and May, 1927, showing occasional bouts of fever.

HISTOLOGICAL REPORT

The tissues preserved by Dr. Cropper were sent to Prof. M. J. Stewart of Leeds, to whom I am much indebted for the following report:—

1. *Bronchial gland.*—The histological characters of this gland are those of Hodgkin's disease in a moderately early stage. The normal glandular architecture is entirely lost, the whole section showing a uniform collagenous reticulum with endothelial cells, small "Hodgkin" giant cells and lymphocytes, scattered about in the meshes. The giant cells are fairly numerous and very characteristic, with large, lobulated nuclei. No eosinophils are seen, but the staining is poor.

2. *Axillary gland.*—The changes here are in keeping with a much older Hodgkin's lesion of the chronic type. The gland is much and extensively fibrosed, but many endothelial cells are scattered about amongst the collagenous matrix.

Here and there are areas of greater cellularity, where, in addition to accumulated endothelial cells, there are many lymphocytes and a few Hodgkin-type giant cells. Again no eosinophils can be distinguished.

3. *Lumbar gland.*—The appearances here are quite different from both (1) and (2). The lymph-gland tissue is wholly replaced by loose cellular tissue of endothelial type, held together by a scanty collagenous reticulum. Some of the cells are of Hodgkin giant-cell appearance. The only lymphocytes seen are a few in certain narrow ill-defined fibrous septa which run through the growth. There is no dense fibrosis as in (2), but there are scattered fairly extensive patches of recent necrosis.

Spleen.—The structure is much altered, the organ showing areas which are strongly suggestive of Hodgkin's granuloma.

The *kidney* shows much post-mortem change, but nothing to suggest Hodgkin infiltration.

Liver.—There is no definite evidence of infiltration by Hodgkin's granuloma, although one small focus is suspicious. There is some patchy lymphocytic infiltration of portal tracts. The hepatic lobules are in part rather degenerate (fatty change plus early cytolysis). The most obtrusive feature of the section is the presence of many hyperplastic nodules of various sizes.

Heart wall.—The narrower section (? right ventricle) shows notable adipose infiltration of the muscle. The wear and tear pigment at the poles of the nuclei in the muscle-fibres is abundant (brown atrophy). The broader section (? left ventricle) shows, as its most obtrusive feature, extreme engorgement of the delicate, thin-walled capillaries of the outer half of the myocardium and adjacent sub-epicardial fat. The latter infiltrates the muscle slightly. "Brown atrophy" is even more marked than in the first section.

Smears of bone-marrow and spleen show nothing of note.

Prof. Stewart's conclusion is as follows: "I think the glandular and splenic changes are in keeping with Hodgkin's disease. The bronchial gland is typical of the active and moderately early stage, the axillary of the chronic fibrous stage. The lumbar gland is atypical, but still in keeping with the diagnosis. The absence of eosinophilia does not seriously discount this opinion."

SPONTANEOUS SUBARACHNOID HÆMORRHAGE

FROM CONGENITAL INTRACRANIAL ANEURYSM

By Maurice E. Shaw, M.D. Oxf., M.R.C.P. Lond.
ASSISTANT PHYSICIAN TO THE WEST LONDON HOSPITAL

In 1923 Symonds[1] drew attention to the clinical manifestations of congenital intracranial aneurysms. Before this date such aneurysms had not infrequently been noted at post-mortem examinations, but the clinical picture was not sufficiently definite to permit of diagnosis before death. Since the publication of Symonds's paper a considerable number of cases has been recorded in which a clinical diagnosis of congenital aneurysm has been made with a reasonable degree of certainty, in spite of the fact that in a number of these cases the diagnosis has not been verified at autopsy, the patients having survived. I reported such a case myself in 1927.[2]

A spontaneous hæmorrhage into the subarachnoid space is now a well-recognised condition which is easy to diagnose with the aid of lumbar puncture. Often the diagnosis may be made with considerable confidence without examination of the cerebro-spinal fluid. In young patients who show no evidence of any other disease such hæmorrhages are usually due to the presence of an aneurysm of one of the arteries at the base of the brain. If the aneurysm is so situated that it will give rise to precise localising symptoms, its position can be predicted with as great certainty as its presence. The following case illustrates the main points in the diagnosis of subarachnoid hæmorrhage; it also illustrates some of the signs and symptoms caused by an aneurysm at the base of the brain.

CASE RECORD

A married woman, aged 50, was seen at midday on April 16th, 1932, in consultation with Dr. P. C. Bhandari, at Brentford. She had been travelling home from a holiday the previous evening by road. At about 5 P.M. she stopped her husband, who was driving, and told him that she did not feel well He helped her to get out, and she rapidly became unconscious.

She was brought home by ambulance and regained consciousness during the night, but complained of severe headache which was unrelieved by the ordinary remedies. When I saw her the next day she was tossing about in bed, unable to get any relief from the pain, which was most severe in the frontal and occipital regions.

Ptosis of the left eyelid was at once obvious. On more detailed examination complete paralysis of the left third cranial nerve was found, but no other lesion of the central nervous system could be detected. All the reflexes were perfectly normal; sensory and motor functions were unimpaired, and the optic discs showed no changes. There was very slight rigidity of the neck, but Kernig's sign was negative. The heart was normal, and the blood pressure 153/85. Nothing unusual was found in the chest or abdomen.

I felt certain that a subarachnoid hæmorrhage was the cause of the loss of consciousness. The oculomotor palsy suggested that the site of the hæmorrhage was in close relation to the circle of Willis, and the possibility of an aneurysm in this position had to be considered. There was no evidence of arterio-sclerosis or other disease, such as ulcerative endocarditis, which could have caused an aneurysm. On the other hand, I thought that a congenital aneurysm would have been likely to show itself before the age of 50. Her previous history was quite negative when I first inquired about it, but on asking the husband whether he could remember any sort of attack similar to the present one he recalled that, during his absence at the war, he had been told of his wife having a "stroke" from which she had made a perfect recovery. This history completed the clinical picture, and left practically no doubt that we were dealing with a congenital aneurysm which had given rise to two attacks of hæmorrhage.

I advised her immediate removal to hospital, and she was given an injection of gr. ¼ of morphia. A few hours later she was admitted to the West London Hospital, where I performed lumbar puncture, and drew off a typical blood-stained fluid. The wisdom of performing lumbar puncture may be questioned; theoretically, it seems to me to be irrational as, by lowering the intracranial pressure, it must tend to make recurrence of hæmorrhage more likely. I confess that I was led to the performance of puncture very largely by a desire to confirm the diagnosis, which could not then be questioned in the event of recovery. Only sufficient fluid was removed to prove the presence of hæmorrhage, and morphia was given for relief of the headache and to control the restlessness.

The pulse-rate, which had been 60 before the puncture, rose to 84 afterwards. On the next day it was 44, and the temperature had risen from 99·2° to 100° F. A further lumbar puncture was performed by a well-meaning house physician without my authority, but, in view of the slow pulse, it was possibly justified. The condition certainly improved, and the temperature became normal the next day.

The improvement continued until April 25th, when the patient suddenly became unconscious and died in a few hours. Clearly another and larger hæmorrhage had taken place. During the whole time the patient was in hospital the cranial nerve palsy persisted unchanged, and no further evidence of involvement of the central nervous system made itself apparent.

A *post-mortem examination* was made by Dr. R. Elworthy. A small ruptured aneurysm was found on the left anterior choroidal artery close to its origin from the internal carotid. e under-surface of the temporal lobe was covered with ravasated blood, and a considerable quantity of blood l found its way into the lateral ventricle. This was bably the result of the terminal large hæmorrhage, the od following the course of the artery into the ventricle. e position of the aneurysm is indicated in the illustration, ich is semi-diagrammatic.

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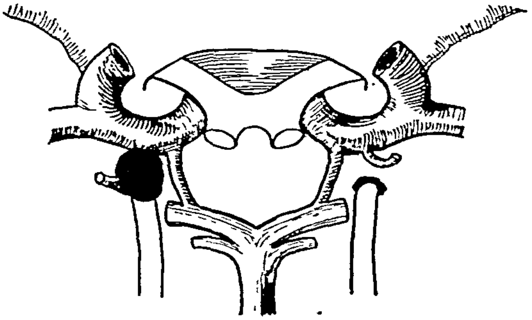
[1] Symonds, C. P.: Guy's Hosp. Rep., 1923, lxxiii., 139.
[2] Shaw, M. E.: Ibid., 1927, lxxvii., 242.

DISCUSSION

Cases similar to the one here described are probably irly common but, although the condition is oroughly familiar to neurologists, it has not yet tained the wide recognition that its frequency erits. I find that house physicians and post-aduate students regard such cases as rare, and think iat their diagnosis can only be made by a skilled eurologist. I believe that in most cases of sub-rachnoid hæmorrhage from congenital aneurysms, he diagnosis is no more difficult than that of lobar neumonia. The first essential is to keep the ossibility in mind when called to see a case of sudden oss of consciousness—especially in young patients. ubarachnoid hæmorrhage may be due to other auses, especially in older patients, but the history f its onset will always be similar. Where the hæmor-hage is not due to an aneurysm the localising signs nay be absent.


iagram showing position of aneurysm (black) at junction of *internal carotid and anterior choroidal arteries* and its relationship to the left oculomotor nerve.

In all cases of subarachnoid hæmorrhage the onset s sudden. Loss of consciousness is the rule, and lasts or a variable period. Progressive recovery, at any ate temporarily, is usual. Localising signs may or nay not be found, depending upon the source and ocation of the hæmorrhage. They vary from complete ranial nerve palsies, as in the case here described, to indefinite hemiparesis merely indicating diffuse pressure on one or other motor tract. As with any hæmorrhage into a serous cavity, there is usually a rise of temperature. The presence of the blood in the subarachnoid space causes irritation of nerve-roots, and so gives rise to varying degrees of neck rigidity, and even, sometimes, to a positive Kernig's sign. When all these features are marked, the clinical picture is very similar to that of meningitis, and there can be no doubt that in the past most of the cases were diagnosed as meningitis; where blood was found in the cerebro-spinal fluid this was attributed to carelessness in the performance of the lumbar puncture.

In point of fact, accidental hæmorrhage during puncture is very uncommon. It can only occur if the needle is pushed too far and so strikes the venous plexus on the anterior wall of the vertebral canal. Anyone with experience of lumbar puncture would know that this had happened. If any doubt exists, it can be dispelled by collecting the fluid in several successive tubes. If the hæmorrhage is spontaneous all the tubes will contain an equal admixture of blood, if it is accidental, the tubes will contain progressively less and less blood. If the hæmorrhage has taken place more than 24 hours before the puncture is performed, hæmolysis will have begun and the fluid, separated from the blood corpuscles either by centrifuging or by simply letting it stand, will have a distinctly yellow tinge. The yellow colour can be proved, by the use of the spectroscope, to be due to hæmoglobin or its derivatives. These facts are well known, but I still meet with house physicians who blame themselves for a clumsy puncture (and discard the fluid, the only evidence of their innocence!) in cases of undoubted spontaneous hæmorrhage. This mistake should not be made if the possibility of a pre-existing hæmorrhage is in mind.

The clinical features are usually sufficiently distinct to differentiate spontaneous hæmorrhage from meningitis. Reference has already been made to the signs of meningeal irritation which may be caused by the presence of blood in the subarachnoid space. The pyrexia associated with subarachnoid hæmorrhage is, however, less than is found in a case of meningitis of sufficient severity to start with the dramatic suddenness of a hæmorrhage. A sudden onset is not infrequent in cerebro-spinal meningitis, but such cases are usually accompanied by high temperature and get progressively worse during the first few days of the illness. In subarachnoid hæmorrhage the temperature is low and irregular, and the symptoms become less severe unless a further hæmorrhage takes place. Meningitis will not usually give rise to the localising signs which may be found when a hæmorrhage arises from an aneurysm. A history of a previous attack is, perhaps, the strongest evidence that can be obtained in favour of hæmorrhage and against meningitis. Congenital aneurysms quite commonly give rise to one or more attacks of hæmorrhage before one of these proves fatal.

The treatment is that of hæmorrhage in general. The only question which arises is the advisability of lumbar puncture. As a diagnostic procedure this may be necessary. As a therapeutic measure it is probably better avoided, except for the relief of a dangerously high intracranial pressure. In the latter case only sufficient fluid should be removed to restore the pressure to normal, the manometer being used. The presence of papillœdema is a definite indication for the relief of pressure but, in the absence of this sign, lumbar puncture is not desirable.

THE HYPODERMIC INJECTION OUTFIT IN PRIVATE PRACTICE

By W. E. Waller, M.D. Oxf., M.R.C.P. Lond.

The hypodermic injection outfit is perhaps the most abused portion of the physician's or surgeon's armamentarium—a statement which possibly applies with equal force to hospitals.

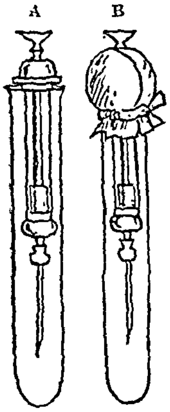
The great increase in late years of hypodermic, intramuscular, and intravenous therapy lends to the practical side of the subject a fresh interest. The increasing production by surgical instrument firms of a sequence of patterns of spirit-proof cases for the outfits and of ampoule syringes for emergency use indicate attempts to tackle some of the technical difficulties. Finally, broken hypodermic needles are not unknown, and gain prominence in the lay press.

For many years I have employed the following system in the organisation of injection apparatus, whether for hypodermic, intramuscular, or intravenous use, or for diagnostic venepuncture. The apparatus required is kept mobilised for use on a special small table, but the essential parts can, with ease and despatch, be taken on the round. Apart from the syringes and needles, the cost of the outfit is almost negligible, because it is for the most part adapted from material ready to hand.

Storage of syringes.—The following remarks apply especially to Record syringes or those of similar type. The syringe, carrying a stainless steel needle of fairly wide bore, for filling purposes only, and cleaned as stated below, is housed in a test-tube of such calibre that the barrel of the syringe can easily be inserted but the upper metal shoulder cannot (Fig. 1, A). A collar of sterile cotton-wool, completely covered by a similar collar of white lint, is fitted round the protruding part of the piston shaft below its top disc, and secured round the upper part of the test-tube below its lip, by means of a twist of bandage (Fig. 1, B.) The syringe is thus kept quite secure and dry and, suitably protected, can be safely transported in the bag and by car over rough country roads. In the surgery several syringes thus housed can be stored in a large glass sponge jar with a loose cover. This costs about five shillings. A 4 lb. jam-jar would serve equally well.

Storage and sterilisation of needles.—In a previous communication[1] I pointed out the advantages of storage and sterilisation in olive oil. Briefly the advantages are: (1) assured sterility; (2) no rusting or blocking; (3) injection made easy and as nearly as possible painless; (4) risk of break minimised from absence of rust; (5) needles do not appear to lose sharpness or temper.

FIG. 1



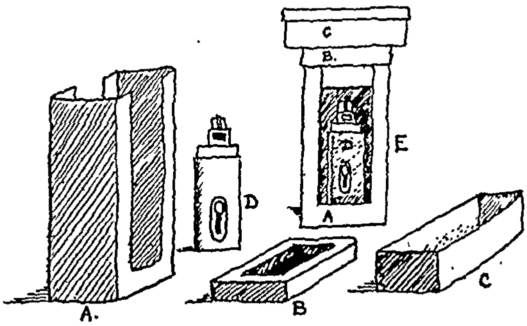
Record syringes housed in test-tubes.

The practical application is as follows. A stove is conveniently constructed from a ½ lb. Colman's mustard tin, from the front, back, and lid of which appropriate apertures are cut (Fig. 2, A and B). The aperture in front must be of such size that the introduction of the ordinary pattern of Meta fuel lamp, with its metal foot-piece detached, is possible. The steriliser itself consists of the empty plated case of a 10 minim Record syringe. This is large enough to take all sizes of needles likely to be used (Fig. 2, C). This steriliser, without its lid, is half filled with olive oil, placed on the top of the stove, and heated by the Meta lamp until boiling just starts, at which point the lamp is removed by an old pair of Spencer-Wells forceps kept for the purpose. The whole of this part of the outfit is housed in a glass dish, convenient inside measurements of which are 4½ in. long, 3½ in. broad, and 1½ in. deep. This dish is necessary when transport of the set is desired, and also from the point of view of cleanliness, since the stove and other items tend to become oily. In the surgery it is convenient to stand the dish and its contents on a plain glazed tile, 6 in. square, in no way different from the kind used in the walls of bathrooms. This is obtainable at any general store for a few pence. The stove requires cleaning with Vim from time to time, and the oil should be changed when its colour deepens.

Preparation of injection.—A second tile affords an excellent surface and carries small bottles of distilled water, surgical spirit, ether, iodine, small swabs, Meta fuel, and a small pot for expended ampoules, syringe washings, and other waste. Two other items are available—namely, (1) the inside fitting of the Record syringe case, which affords an excellent stand for the syringe (Fig. 4 simplified); (2) the metal bottom piece of the Meta lamp, which can be used as a support for ampoules (Fig. 3 simplified). A plated egg-spoon of plain pattern is added for use in dissolving injections in tablet form, and for sealing the punctures made in the rubber caps of vaccine bottles.

The syringe is withdrawn from its test-tube, and spirit drawn into it. It is then left for two minutes, supported on its stand, while the needles are sterilised and the injection made ready. The spirit is then expelled, the syringe rinsed out with more spirit, then with ether, and the piston worked till the inner surface is dry. By this time the oil will probably be boiling. The lamp is therefore removed and the filling needle sterilised by flaming, the solution being then drawn into the syringe. The filling needle is now replaced by an oil-boiled needle by means of the forceps, the blades of which are sterilised by flaming. It is advisable, when using oil-boiled needles, to leave an air bubble in the syringe, the expulsion of which will drive out oil remaining in the needle. If this is not done, blocking of the needle may occur from the cooling of the oil if the weather is very cold and if some time elapses before the injection is administered. If these procedures are carried out systematically, no oil will gain access to the interior of the syringe. The great convenience of the tiles will also become manifest.

FIG. 2



Improvised steriliser and stove. A, improvised stove with lid removed. B, lid of stove. C, steriliser without lid. D, Meta fuel lamp without its stand. E, stove, steriliser, and lamp assembled. (Scale of front objects approximately 2/5.)

After use the syringe is cleaned out by fixing the filling needle and washing out with distilled water, spirit, and ether until dry, when it is replaced in its tube. Some spirit and ether is expelled through the injecting needle, which is then dropped back in the steriliser.

Use on the daily round.—Two methods can be adopted. (1) The injection can be prepared at home, and the syringe taken to the patient secured in its test-tube. This method should not be used with serum, since there is a risk of the piston becoming glued up. (2) The stove can be stored flat in its glass dish, the Meta lamp and steriliser with its lid can be fitted inside it, and the spoon and forceps can occupy the spare space. This travels safely in the bag if kept from upsetting, though some sort of cover for the dish would be an advantage. The syringe and bottles are taken separately and appropriately protected. One of the patterns of medical bag fitted with drawers and racks for bottles is ideal for this purpose.

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[1] THE LANCET, 1930, i., 1210.

FIG. 3

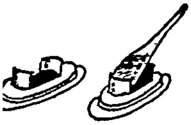
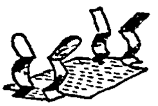


FIG. 4



IG. 3.—Stands of Meta lamp (simplified). In the right-hand one an ampoule is shown in situ.

IG. 4.—Inside fitting of Record syringe case (simplified).

Modifications.— The system described above meets most requirements, but modifications will suggest themselves, ome of which are: (1) after use with a serum he syringe must be dismantled and washed horoughly in running water; (2) care should be aken to expel all oil from the needle when sclerosing injections are being given; (3) oil-sterilised needles hould not be used in taking blood for agglutination reactions, but can be used for blood culture work.

Rustington, Sussex.

Clinical and Laboratory Notes

CLINICAL FEATURES OF FORTY-SEVEN CASES OF INFLUENZA

BY H. L. MARRIOTT, M.D., M.R.C.P. LOND.
RESIDENT MEDICAL OFFICER, MIDDLESEX HOSPITAL, LONDON

THE following note concerns 47 cases of influenza among the staff of the Middlesex Hospital between Dec. 20th, 1932, and Jan. 10th, 1933. This, I believe, is a lower proportional incidence than has occurred in many London hospitals. The patients consisted of 36 sisters and nurses, 5 massage students, 4 maids, and 2 house officers.

The cases were of two distinct types characterised by symptoms affecting the alimentary and respiratory systems respectively. There were 7 cases of the alimentary type and 40 of the respiratory type. Within each group the manifestations were remarkably constant from patient to patient.

Alimentary type.—The symptoms were epigastric pain, nausea, vomiting, and diarrhœa. The physical signs in every case were slight to moderate tenderness in the epigastrium and slight but definite tenderness in the right iliac fossa.

Respiratory type.—The main symptom was troublesome dry cough and a sensation of tightness over the sternum; in 5 cases there was definite pain in the sternal region. As well as the cough, the patients complained of stuffy noses and slight soreness of the throat. In a few cases the fauces appeared generally red and inflamed, but in the majority the throat seemed normal. In not 1 case of the 40 were physical signs detectable in the chest.

In both types the onset was fairly sudden, and in all cases there was general malaise and aching of the limbs. The temperature ranged from 99° to 104° F.; temperatures of 102° and over were recorded in 1 of the 7 alimentary cases and in 22 of the 40 respiratory cases. The pulse-rate varied from 80 to 140. The febrile phase lasted from one to three days in the alimentary cases, and from two to nine days in the respiratory cases. In both types recovery of well-being was rapid as soon as the temperature became normal. The incubation period for either type appears to be from one to three days.

Perhaps the most remarkable feature of the epidemic was the similarity of the symptoms, signs, and course of the cases within each of the two groups; they were "like peas in a pod." No case appeared to combine the features of the two types. I have also observed the same clear-cut varieties in several score of out-patients and in-patients of the hospital. Among out-patients affected by the respiratory type of infection many had signs of bronchitis or bronchopneumonia, in contradistinction to the 40 cases domiciled in the hospital. This appeared to be due to the patients keeping about when febrile. The alimentary type of infection may easily be mistaken for an acute surgical abdominal condition, and the definite tenderness in the right iliac fossa naturally suggests the possibility of acute appendicitis.

The bacteriological aspect of these cases is being investigated by Prof. James McIntosh and Dr. L. E. H. Whitby, of the Bland-Sutton Institute of Pathology. Their investigations are not complete, but it may be stated that Pfeiffer's bacillus has been notably absent from the specimens examined.

SINGLE-HANDED METHOD OF REDUCING FRACTURES OF THE TIBIA AND FIBULA

BY PHILIP GLYNN, F.R.C.S. ENG.
RESIDENT ORTHOPÆDIC OFFICER AT LEEDS GENERAL INFIRMARY

HAVING read Watson Jones's recent paper[1] on his traction apparatus for reduction and plaster of fractures of the tibia and fibula, I wondered if there was any way of avoiding the use of the pin through the os calcis as the method of traction, at the same time employing the principle and making unnecessary the presence of a skilled assistant either to hold the limb or to plaster. The following method has therefore been devised.

The patient is anæsthetised on an ordinary operating table or trolley, the height of which it is possible to adjust. When fully anæsthetised he is pulled down the table until his legs are flexed at the knee over the edge and a sandbag is placed under the thigh as high as possible to allow the knee to hang clear of the table. The operator sits on a low stool opposite the patient's legs and the table is lowered until the ankles are at a level with his knees. The operator then grips with his knees the patient's ankle and the end of the table is raised until he feels the limit of his grip has been reached, the fragments are manipulated into position and a tight-fitting plaster is applied from the tibial condyles to the malleoli and allowed to set. The fracture is now held against anything except gross movement of the damp plaster, and the foot and thigh are plastered at leisure.

The key to the business is first the grip of the knees; and it is found in practice that the femoral condyles fit remarkably snugly into the hollow below and behind the malleoli, and the hold is quite sufficient to draw out any overlap and to hold the extension, provided that the patient is sufficiently relaxed. For those who have weak adductors it is recommended that they be supplemented by a strap round the thighs. Secondly, the plaster must be tight-fitting, especially at the prominences of the tibial condyles and malleoli. Where an adjustable table is not available the same principle, with of course not quite the fine adjustment, could be obtained by placing books under the legs of an ordinary table.

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[1] Jour. Bone and Joint Surg., 1932, xiv., 591.

While I do not claim for this method the 100 per cent. results of the Watson Jones traction apparatus, it is a definite advance on the older method in which one person holds the limb and another plasters—a difficult proceeding even where both are skilled. The results are infinitely better. It is so simple and effective that it must have occurred to and been used by many other people; to them I offer an apology.

MEDICAL SOCIETIES

EDINBURGH OBSTETRICAL SOCIETY

AT a meeting of this society on Dec. 14th with Dr. JAMES YOUNG, the President, in the chair, a communication on the

Diagnosis of Placenta Prævia

was made by Prof. J. M. MUNRO KERR and Dr. W. G. MACKAY (Glasgow). Prof. Munro Kerr referred to the high proportion of maternal deaths due to placenta prævia, and stated that in order to maintain a low maternal death-rate it was of the highest importance that the most suitable method of treatment should be selected for each case. He spoke of the great difficulty not only of diagnosing the variety of placenta prævia but also of distinguishing between placenta prævia and accidental hæmorrhage. Any satisfactory method of differentiation would be of the greatest value.

Dr. Mackay gave a short résumé of previous investigations which had been carried out in order to locate the position of the placenta in the uterus; he came to the conclusion that the only one up to the present which had been at all satisfactory was that of Mances, Miller, and Holly, who had injected strontium iodide into the amniotic sac of pregnant women. The placenta which projected into the cavity produced a defect at the edge of the shadow when the uterus was pictured from the correct angle. Prof. Munro Kerr and Dr. Mackay had tried this method on ten cases, but as the fœtus had died in three cases it was given up and Uroselectan B, which is non-toxic and non-irritant, was substituted for strontium iodide. Twenty cubic centimetres of this substance were found to produce a suitable shadow, and in the ten cases there were no untoward effects either in the fœtus or to the mother, though there was no doubt that the injection had a great tendency to terminate pregnancy. It was necessary to take at least two radiograms, one postero-anterior and the other lateral. Those he showed at the meeting demonstrated the position of the placenta not only in normal cases, but also in cases of placenta prævia. It could be ascertained, he said, exactly how much of the placenta was in the lower uterine segment and covering the os. Sometimes it was also possible with X rays to diagnose the sex of the child, and to decide whether any coils of cord were round the child's neck.

Radiotherapy in Gynæcology

Dr. J. B. KING described the principal methods of applying radiotherapy in cancer of the cervix. He believed that the problem of the treatment of the primary lesion was solved and that the minor variations of technique now used in different clinics did not matter greatly as long as the cervix received some 4 to 5000 mg. hours suitably filtered. But the treatment of the parametrium and glands had still to be investigated thoroughly in order to improve the mortality-rate, which was even in the best statistics about 51 per cent. in early cases. Dr. King considered that the only line along which this problem could be attacked was by X ray therapy; it was certain, he said, that the highest percentage of cures had been in the clinics where X rays had been used as an adjunct to radium. He mentioned that 400,000 volts would soon be a possible dose—which was almost double the dose now available—and he thought that with this dose the pelvis could be irradiated very completely. The radium bomb might also be of use for this purpose. There was no danger in carrying out radium or X ray treatment immediately after one another in cases of uterine carcinoma, and he thought that the X ray sickness, so called, due to intensive radiation, was a thing of the past.

Dr. King then discussed radiotherapy for carcinoma of the body of the uterus and of the ovary and concluded that though radium might be of use in the former it was not likely to be of any avail in the latter. In the treatment of fibroids radiotherapy had several advantages over operation. He did not believe in the cure of amenorrhœa by so-called stimulation doses of X rays to the ovaries; for he held that no such effect as slow stimulation was caused by radiation. Successes might be attributed to destruction of persistent cystic follicles rather than to stimulation of ovarian secretion.

HARVEIAN SOCIETY OF LONDON

THE 101st annual general meeting of this society was held on Jan. 12th at 11, Chandos-street, W. The retiring president, Mr. CECIL P. G. WAKELEY, delivered his presidential address on the Rôle of Specialisation. Mr. Wakeley recognised that specialisation in medical practice was inevitable owing to the individual's inability to make himself familiar with the many and varied additions to his science and art, but in this country specialisation was characterised by certain developments which were not beneficial to the community. For example, regional specialisation in the art of surgery was largely artificial; it gave rise to various " 'ologies " which were of economic value to their practitioners but of dubious value to the patient. Again, the teaching of medicine and surgery in multiple special departments tended to divorce the student from the general principles. Mr. Wakeley contended that specialisation in hospital practice should be determined by the genius of the individual practitioner and the interests of the patient; it should not be enforced on successful candidates for hospital appointments because it was convenient to hospital administration. For the treatment of the sick he agreed with Vesalius (1543), who described the "distribution among different practitioners of the practical applications of the art" as mischievous.

Mr. Wakeley then inducted the new president, Lieut.-Colonel E. L. Gowlland, into the presidential chair. Dr. Tom Hare and Dr. Macdonald Critchley were appointed hon. secretaries, and Mr. Wakeley hon. treasurer.

CORRIGENDUM.—In THE LANCET of Jan. 14th (p. 84) Prof. Stanley Davidson was wrongly reported as saying that a preparation of solid ferrous chloride on the market costs the patient 4*s*. a day. The sum mentioned was 4*d*, not 4*s*.

REVIEWS AND NOTICES OF BOOKS

Mental Deficiency due to Birth Injuries

By EDGAR A. DOLL, Ph.D., Director of Research, Vineland Training School, New York; WINTHROP M. PHELPS, M.D., Professor of Orthopædic Surgery, Yale University; and RUTH T. MELCHER, M.A., Research Assistant, Vineland Training School. London: Macmillan and Co., Ltd. 1932. Pp. 289. 24*s*.

VERY varied estimates are current of the proportion of mental defect that is attributable to birth injury. Institutional statistics in the past have often shown very high percentages; the authors of this monograph, who betray a tendency to overstress the importance of birth injury in causation, suggest a percentage of between 5 and 10. Tredgold, although he obtained a history of birth injury in a large number of cases, rejected it as a cause except in about 1 per cent. or 2 per cent., because mostly there was also a definite neuropathic taint. The mental deficiency committee of the British Medical Association recommended critical care in the examination of any claim that birth injury is a cause of mental defect in any specific case; Dr. Doll and his colleagues, on the contrary, seem to suggest a possibility of such causation in cases where no such claim is made. The physical and mental condition of 12 cases specially studied are recorded in this monograph, the ætiology and development and the results of neurological examination and of mental and physical measurements being set out. All these were cases in which birth injury had apparently produced a permanent mental defect along with serious motor handicap, manifested usually as spasticity, athetosis, or incoördination. They cover a wide range of age of both sexes, including all grades of defect up to the borderline.

The authors propound more problems than they solve, and the work lacks positive results. One of the main objects of the investigation was to discover how far it is possible by physical therapy to improve not merely the motor condition of the subjects but also their mental condition. Dr. Doll and his collaborators are their own severest critics when they admit that it was not possible adequately to measure either the mental or physical improvement during a period of treatment which they admit, moreover, was too short. Growth processes coinciding with the treatment interfered with the assessment of results, and while some increase of mental alertness and improvement in social functions were noted, a careful study of the detailed descriptions fails to reveal any improvement of substantial value to the individuals concerned. In the course of the inquiry it was found necessary to attempt to estimate the value of certain types of mental tests in assessing these subjects. The Stanford-Binet scale seemed to be less affected than were other tests by handicaps of speech and motor control, and lack of experience and training. The authors claim to have demonstrated that birth-injured cases tend to show a type of development which continues beyond the usual age of maturity, so that early retardation is offset by the prolongation of later development. So wide an inference, however, can scarcely be based on the study of a few cases. There is much repetition in the book, and, from the reader's point of view, the arrangement by which he has to search through four different sections of the book, including an appendix, to obtain a complete account of any one case is not convenient. It is to be hoped that the investigation, which is being continued, will later be more fruitful of positive results.

Mechanism of Creative Evolution

By C. C. HURST, Ph.D. Cambridge University Press. 1932. Pp. 365. 21*s*.

Recent Advances in Plant Genetics

By F. W. SANSOME, Ph.D., and J. PHILP, B.Sc. London: J. and A. Churchill. 1932. Pp. 414. 15*s*.

Recent Advances in Cytology

By C. D. DARLINGTON, D.Sc., Ph.D. London: J. and A. Churchill. 1932. Pp. 559. 18*s*.

MAN has been moulded by variation and natural selection. He has advanced beyond brute beasts by his capacity to control his environment, and live, to some extent, under conditions which he chooses himself. In this way he has had an influence on natural selection, qualitative and quantitative, and he has so arranged his surroundings that moral and spiritual as well as carnal qualities have their values. But he has taken very little deliberate action to arrange himself, and the practical purport of these three books is to explain that the great advances which have been made in genetics in the last 30 years have put him into the position of being able to add a cubit to his stature if he wants to, and to surround himself with animals and plants which are to his liking. This is the professed argument of Dr. Hurst's book, which is clear, readable, beautifully illustrated, and cheap; it expounds plainly the doctrine (or fact) that the differences between the species and varieties of live organisms depend on differences in the genes in the chromosomes. The other two are more detailed and technical, and are hardly for general reading. Dr. Sansome and Mr. Philp, who work at the John Innes Horticultural Institution, describe the recent work on plants, and have a final general chapter which we could wish was longer. Dr. Darlington, of the same institute, deals with the same topics in a more general way; his book is for the serious student and the title is quite misleading, for there is practically nothing about any cellular constituent except the chromosomes. Those who are interested in mitochondria and the Golgi apparatus may be disappointed.

La polypose recto-colique

By Dr. PIERRE AUGIER, Chef de Clinique à la Faculté de Médecine de Paris. Paris: Baillière et fils. 1932. Pp. 282. Fr.40.

THIS monograph provides an exhaustive clinical and microscopical study of polyposis of the colon and rectum. The most important type of the disease is described under the name of essential polyposis, which corresponds to the term polyposis intestini, as generally accepted in this country. Every aspect of the ætiology and symptomatology is considered in detail, and the peculiar association with polyposis of two other conditions is noted—one being clubbing of the fingers without cyanosis or venous dilatation ("hippocratisme digital"), and the other "intestinal infantilism," the significance of which is discussed, and is to be further investigated more fully. In Chapter IX. the relationship between polyposis and cancer is debated; the author reports that in 110 cases which he has analysed, malignant degeneration, verified at operation or post mortem, was proved to have taken place in 37 cases, or 33·6 per cent. Other forms of polyposis, such as that associated with bilharzia infection and the inflammatory type of polyposis, are also described. Treatment varies with the type of the disease; the indications for electrocoagulation, radiotherapy, and major surgical operations, such as colectomy, are all discussed. Case reports of 121 cases of polyposis are appended.

This monograph clarifies and consolidates our present knowledge of polyposis of the colon.

An Atlas of Skin Diseases in the Tropics

By E. C. SMITH, B.A., D.P.H., D.T.M. & H. Eng., Pathologist, Medical Laboratory Service, Nigeria. London: John Bale, Sons and Danielsson, Ltd. 1932. Pp. 60. 100 plates. 21*s.*

THE text of this useful atlas is brief; it does not compete with standard works on dermatology. It is primarily intended for the use and reference of tropical practitioners, whose daily work will doubtless bring them into contact with many of the dermatoses herein described and photographically illustrated. As regards illustrations, the book is a real treasure, for none of them appears to be borrowed, and every one is a technical success, the result in part, no doubt, of the pigmented background, against which the lesions stand out like the mountains in a relief map. The photographs and microphotographs demonstrating experimentally produced prickly heat (miliaria papulosa) and with a monilia as the alleged cause will certainly arouse comment. Hitherto a staphylococcus has been generally accepted as a factor, but Dr. Smith has succeeded in producing the typical eruption in from 5 to 12 days by local application of strong broth cultures of the monilia. A further observation of much interest and possible significance relates to the prevalence of melanotic sarcoma, stated to be "by far the most common malignant growth," usually on the foot, among natives. Dr. Smith is doubly qualified to write a book of this kind, for not only has he had clinical experience, but is a trained pathologist, writing most of the time with one eye to the microscope. This pathological approach, together with the admirable illustrations, should ensure the success of his atlas.

Excitability: A Cardiac Study

By W. BURRIDGE, D.M., M.A. Oxf., Professor of Physiology, Lucknow University. London: Humphrey Milford, Oxford University Press. 1932. Pp. 208. 16*s.*

THIS book is difficult to read and to understand. In it are recorded and correlated the results of a long and carefully carried out series of experiments aiming to elucidate the problems of excitability and contraction in muscle, particularly in heart muscle. Using the isolated heart of the frog, Prof. Burridge has tested its reaction to various reagents, as unusual as 40 per cent. alcohol and 5 per cent. KCl. From his results, which are undoubtedly interesting, he attempts to unravel the mysteries of the function of heart muscle, but only succeeds in making it more difficult to understand. He further obscures the issue by entering the field of metaphysics to obtain support for his contentions, and throughout the work steps lightly from this muddy walk of physiology to the still muddier fields of psychology, a feat likely to have a shattering effect on the reader's intellectual processes. For example, his conception of mind as a sort of frothy by-product of the metabolism of nerve-cells is based on no more solid ground than the argument that as contraction of muscle-fibre is a phenomenon in two phases, so a nerve-cell must be possessed of a material and a metaphysical function. The literary style is as original as the matter, but there is an unfortunate tendency to repetition, and a too frequent use of metaphors.

Minor Surgery

Second edition. By FREDERICK CHRISTOPHER, S.B., M.D., F.A.C.S., Assistant Professor of Surgery at the Northwestern University Medical School, Chicago. London: W. B. Saunders Co., Ltd 1932. Pp. 996. 50*s.*

THE new edition of this popular book confirms the high opinion we formed of it when it was first issued. Much new matter has been added to bring it thoroughly up to date. A vast area of knowledge is included in the term minor surgery. The author of a book designed to cover this area can either confine himself to the methods actively practised by himself, or can select from his own and the published experience of others those methods which appear to give the best results. The latter procedure, which has manifold advantages, has been adopted by Prof. Christopher. His descriptions are the more useful since he supplies the sources of information which have guided him in his choice. This is a valuable book, providing a most reliable guide for the house surgeon. Practising surgeons will find within its covers much information that could only be collected by arduous and time-consuming search of surgical literature.

Lunacy Accounts

By T. C. S. KEELY. London: Jordan and Sons, Ltd., Chancery-lane, W.C. 1932. Pp. 79. 7*s.* 6*d.*

EQUIPPED with long experience in the office of the Masters in Lunacy at the Royal Courts of Justice, Mr. Keely has written a short book on lunacy accounts which will be useful to those who, as trustees or receivers, are responsible for the affairs of a mental patient. If lawyers, they may know the relevant Acts and cases, but may have something to learn about the most acceptable method of presenting accounts and about the department's attitude towards particular items of expenditure. If laymen, the information (and the specimen accounts) will be all the more valuable. Will the Master, for example, sanction allowances from surplus income to the patient's wife and family, poor relations, and old servants? Will he authorise the continuance of the patient's club subscriptions? What may properly be included under "Miscellaneous Expenditure"? Mr. Keely answers these and similar questions. He advises us not to put down a round sum for miscellaneous expenses—not because the department wants to be niggardly, but because a receiver should not charge for such items more than he has actually spent. Nowadays the department, in reviewing the management of a patient's estate, wants more than mere columns of payments and receipts. It may ask about his housing, care, and comfort, his capacity to enjoy outings, amusements, and little luxuries, the desirability of moving him, and whether any special course of training or treatment, surgical operation, or dental attention is required. Mr. Keely assures us that the department welcomes suggestions for the benefit and advantage of a mental patient, and gives effect to any which are found possible and desirable.

THE LANCET

LONDON: SATURDAY, JANUARY 21, 1933

THE PROBLEM OF CONVALESCENCE

Acute illness appeals to the imagination both of the patient and of those who have the care of him. It is, as Charles Lamb remarked,[1] a magnificent dream for a man to lie a-bed, and draw daylight curtains about him, to become insensible to all the operations of life except the beatings of one feeble pulse, to be a giant of self-importance who swells in the sole contemplation of his single sufferings—epitomised by Lamb in the phrase "the puffy state of sickness." The treatment of acute illness has been developed into a state of great efficiency; outside Ford's works there is probably nothing much more efficient than the team of an operating theatre with its quiet concentration on essentials of life and death. But, as Lamb remarks, how convalescence shrinks a man back to his pristine stature. Even the visitations of the medical attendant have changed. Can this be he who so lately came between the patient and his cruel enemy, as on some solemn embassy from nature? This man of news, of chat, of anecdote. "Pshaw!" says Elia, "'tis some old woman." And it is a matter of everyday experience that the treatment of the convalescent, being further from the centre of interest, lacks the care and attention which it deserves. We know, for instance, with rather insistent accuracy, the risks of childbirth; but no one can more than guess the extent to which he chronic illness which it leaves in its train cripples the happiness and efficiency of domestic ife. The patient is treated adequately in hospital or, let us say, pneumonia or some surgical emergency. He goes out "cured"; and indeed every effort is made to speed the parting guest, for the unning cost of hospitals is necessarily high. But his discharge from hospital may be delayed beyond the time when he requires such special attention because of the fear that he is unlikely to regain at home the fitness to resume his daily avocation. He may be left with some respiratory infection, with debility, and some slackness of the abdominal muscles, and because in our present system the means are lacking of securing for him complete convalescence and a return to full vigour, these disabilities persist too long or result in some degree of permanent unfitness. There are many directions in which the same conclusion is reached. In a discussion at the Liverpool Medical Institution, reported in our last issue, Dr. H. E. Moore, speaking as a railway surgeon, made it clear how much of the wastage resulting from industrial injuries is avoidable; for, he said, if only proper treatment had been given at an early stage, many instances of long incapacity might have returned to their former occupations in quite a short time. Surgical supervision, adequate at the start, becomes too spasmodic to be effective, and he counselled the setting up of traumatic centres throughout the country controlled by orthopædic surgeons of experience and providing free facilities for insured persons whose convalescence from injuries was proving tardy. It was pointed out in the same discussion how, in the presence of a minor disability, allowed to remain after an injury, even a keen worker was prone to fear the moment of his return to work, from the feeling that his incapacity might increase and lead to discharge on the grounds of inefficiency. On this account even trivial injuries are apt to cause undue delay in returning to full work.

Convalescence has been paraphrased rather neatly as the after-treatment of hospital patients, and the problem is not to be solved by prolonging the stay in hospital, for quite apart from expense it is undesirable for the patient's psychical condition for him to stay longer than necessary. The difficulty is world-wide. From a letter by Dr. G. Kahlmeter to the *Archives of Medical Hydrology* (January, 1933, p. 121), it is clear that in Stockholm large numbers of patients are retained unduly long in hospital owing to the difficulty in placing them. They ought to leave sooner for, Dr. Kahlmeter tells us, the hospital atmosphere makes them depressed, and the difficulties—not to say aversion—which they experience on returning to their old work and home surroundings become greater with lapse of time. On the other hand, if sent home too early they are as a rule forced immediately to resume work which is beyond their strength at the time, and the benefit derived from the hospital treatment is thus nullified and their general condition aggravated, or the malady relapses. Many patients are instinctively afraid of this, with the result that their mental state during the latter part of their period in hospital is often disquieted by worrying about too early a discharge. It will be noted how closely Dr. Kahlmeter's experience agrees with that recorded by the Liverpool surgeons. How is this awkward period between hospital discharge and resumption of work to be filled in to the best advantage of body and mind? It should not, as we have seen, be spent in the hospital atmosphere, nor is the return to unsupervised home life any nearer the ideal. Most of our experience of the means of filling up this interval has been gained from the experience of institutions where the interval is so long that something has to be done about it. In the prolonged convalescence of mental disease and of acute tuberculosis great centres have arisen in which treatment of one kind or another has been tried out. Some of the county mental hospitals from time immemorial have been setting the employable patients to tasks fitted to their condition, and yet of a sufficiently interesting and productive character to engross their attention and make them feel a growing sense of responsibility for their own lives. In the treatment of phthisis the same tendency may be seen to make the conditions of convalescence resemble more and more closely those of domestic or working life lived under supervised conditions. It is curious how the industrial colony, under one or other name, has arisen as the spontaneous idea of a sanatorium director, impressed by the results of relieving the physical results without considering the mentality of the patient.

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[1] The Last Essays of Elia: the Convalescent.

But it is all too evident that in these straitened times the means would not be available for such residential treatment of all ex-hospital patients, even if it were desirable. Convalescent branches in the country are attached to many metropolitan hospitals, and Edinburgh has an example of what can be done in systematising an institution for efficient convalescence. More institutions of this kind there should certainly be, but in the meantime it remains for us to devise under simpler conditions what Dr. Kahlmeter wisely calls "qualified convalescent treatment." In the hospitals it involves the creation of a social service department as a unit complementary to the medical, surgical, and pathological units of the hospital, and outside the hospital it implies additional facilities for the general practitioner who is at long last the only judge of whether a patient is or is not restored to his normal working capacity. It is difficult to think that the need can be completely met other than by the formation of general practitioner clinics, and once again we come back to the proposals of the Dawson report of 1920, which, like those of the Golden Rule, have not been discredited, because they have never yet been put in practice. The primary health centre, foreshadowed in that report, was to be an institution equipped for services of curative and preventive medicine, conducted by the general practitioner of the district, in conjunction with an efficient nursing service and with the aid of visiting consultants and specialists. Among the equipment there would be baths, apparatus for physical culture, and so forth—in a word, convalescent treatment; with the addition of the occupational therapy as generously defined by Dr. Norah Haworth on p. 171 of this issue. Liberally construed, these primary health centres might develop into recuperative centres, serving the double purpose of restoring patients to health after illness or before their illness has become disease.

HORMONES AND MENSTRUATION

The attention of the general reader is being drawn more and more insistently to the sex hormones. Even within the last few months a further liveliness has been apparent on the physiological and biochemical front, and every few weeks we are confronted with fresh and well-authenticated statements that would have seemed incredible a few years ago. Prof. Walther Schoeller's review in our issue of Jan. 7th illustrated this progress and showed once more that here is one of the most exciting and promising branches of research. At the same time it did not disguise that as yet there has been more promise than performance, so far as clinical medicine is concerned. Looking at Prof. Schoeller's pictures the practitioner must have wished that his patients were potted hyacinths or lilies and would benefit accordingly by small doses of his elixirs. But the gulf even between man and the rabbit remains a wide one, and meanwhile one must recognise that though progress in laboratory experiment has been clear-cut and continuous, the application of the experiments to clinical work has been far from satisfactory. Apart from the very valuable Aschheim-Zondek reaction, the laboratory methods have been more or less a failure when applied to gynæcological diagnosis. On the therapeutic side there is such a mass of conflicting evidence that it is almost impossible to arrive at any definite conclusion. One school of workers, for example, maintain that the action of the follicular hormone (œstrin) obeys the definite body-weight ratio rule, and hold that thousands of units would have to be administered to a woman before any results could be expected. Another school, on the other hand, claim to have achieved definite results by means of small doses of this hormone administered subcutaneously. The difficulties in interpreting any results of this type are very real. In the treatment of any form of amenorrhœa, for instance, the possibility of spontaneous menstruation is so great that it cannot be ignored; while improvement in subjective symptoms, such as those of the menopause, renders quantitative observations impossible.

Œstrin is, by definition, the œstrus-producing hormone *—that is to say, it will induce an œstral cycle in castrated animals. It might be thought therefore that it would induce menstruation in women, and it has, in fact, been used with this object. But œstrus and menstruation are far from being synonymous, and work on monkeys has shown that bleeding induced by injections of œstrin is merely hæmorrhage from an "interval" type of endometrium. Immediately after menstruation, it is believed, the ovaries are inactive and the endometrium is at rest. From about the tenth to the fourteenth day (the "interval") the ovaries contain ripening follicles and the endometrium is hypertrophied—this hypertrophy being attributed to the secretion of œstrin. Then comes the premenstrual or corpus luteum phase—far more prominent in man than in other animals—when the endometrium prepares itself, under the influence of the corpus luteum, for nidation of the ovum. Failing conception, degeneration of this proliferated epithelium takes place and is manifest as menstrual loss. And if this theory is correct it is necessary, in order to produce artificial menstruation, not only that the uterine mucous membrane should be sensitised by the follicular hormone, œstrin, but also that it should go through a pregestational stage under the influence of another ovarian hormone, the "progestin" poured out by the corpus luteum. Prof. Schoeller mentioned that menstruation had now been produced by these means in the human female after double oöphorectomy, and Dr. C. Kaufmann's account of this important experiment has just appeared.[1]

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* Preparations of the follicular hormone, œstrin, are sold under the names of theelin, progynon, menformon, and sistomensin.

[1] Zentralblatt f. Gynäk., 1933, No.1, p. 42.

The patient was a woman who had both ovaries removed five or six years ago, at the age of 17, for dermoid cyst. Her periods had previously been regular. In the middle of October last he began to treat her daily with progynon benzoate—a preparation of œstrus-producing hormone—intramuscularly; and from Nov. 10th to 18th he also administered 10 rabbit units every day of luteal hormone (Schering-Kahlbaum A.G.); the total dose was 320,000 mouse units of progynon and 90 rabbit units of corpus luteum extract. In 24 hours after the last injection of luteal hormone bleeding began. The total quantity in the first day was 20 c.cm. of a viscous, dark red blood in which no epithelial debris could be seen microscopically. When removed after 36 hours the pessary contained a large fragment of tissue which proved to be a piece of uterine mucosa. Bleeding continued for another 30 hours, and the total quantity lost was 40 c.cm.

Dr. KAUFMANN claims, from the microscopical examination, that the bleeding was a genuine menstruation. He points out that the success of the experiment depended on the large amounts of hormone used, the dose being determined from former estimation of the quantity present in the urine of healthy women.

These may seem small matters, if looked at without the eye of faith. But it has to be remembered that the substances now being used in small doses are no longer utterly obscure in constitution, and therefore far beyond control. This was evident from the tentative formulæ we printed a fortnight ago, and even in the short time since then there is news of a notable new advance. In a letter to *Nature* (Jan. 7th), Mr. J. W. COOK, D.Sc., Prof. E. C. DODDS, and Mr. C. L. HEWETT, of the research institute of the Cancer Hospital and the Courtauld institute of the Middlesex Hospital, state that they have found, for the first time, a synthetic organic compound, of know constitution, which has definite œstrogenic properties. On the hypothesis that the follicular hormone or hormones are formed by degradation of sterols they took as the starting-point of their investigations 1-keto-1 : 2 : 3 : 4-tetrahydrophenanthren. Though feeble in comparison with œstrin, this proved capable of producing œstral reactions in castrated rats. The importance of this is obvious; but it may be more important even than it seems. Not only has this substance, in its molecular structure, points of resemblance to that suggested for ketohydroxy-œstrin, but in the opinion of these workers it may also form a bridge between the sex hormones, the carcinogenic hydrocarbons, and substances of the fused-ring type, such as cholesterol and vitamin D.

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MINERS' NYSTAGMUS

IT might have been expected that the questions connected with miners' nystagmus would long before now have been settled. Two reports on the subject by a committee of the Medical Research Council were issued in the years 1922 and 1923. The principal finding of this committee was that the chief symptom of the disease—namely, involuntary oscillation of the eyeballs—was caused by an insufficiency of the light reaching the eyes of the miner while at work, and that of all measures of prevention the most important was to secure for the miner at work an adequate illumination. The Medical Research Council have meantime found it advisable to reconstitute this committee, and they have now issued a third report[1] which deals with the situation as it exists to-day. The alarming fact which the committee have had to face is that in spite of a considerable improvement in the illumination of the mines which has been secured in accordance with the recommendations of the first committee, the incidence of the disease known as miners' nystagmus, as judged by the numbers of those who have been awarded compensation, has, on the whole, steadily increased, the total number of persons to whom compensation was paid having increased from 1618 in 1910 to 7028 in 1920 and 10,638 in 1930. In essaying to account for this formidable increase, the present committee are firm in their support of the main conclusion of the former committee, that the fundamental cause of miners' nystagmus in the narrower sense of the term—i.e., oscillations of the eyes—is the low illumination under which miners in general work, and they adduce weighty evidence to prove that in several mines where a defective system of lighting has been replaced by an adequate system, the results have been so favourable as to confirm this view, and to encourage the policy of introducing improved lighting in all mines where the workers are subject to nystagmus. To account for the actual increase in the "disease known as miners' nystagmus" it is necessary to look in an altogether different direction—namely, to the fact that the disease, as officially defined for purposes of legal compensation, consists not only of eye oscillations, indeed may exist without any eye oscillations at all, but, whether combined with or apart from that particular symptom, is made up of various "nervous" symptoms, some of them connected with the eye, such as photophobia, night-blindness, or temporary loss of visual acuity, others wholly apart from the eye and akin to those with which the Great War made us familiar under the terms "shell shock" or "disordered action of the heart." As the report puts it: "it is not sufficiently recognised that the attribution of nervous symptoms to a physical cause is a probable factor in the evolution of the compensated disease." Owing to the apparent negligence with which the definition of the disease entitling to compensation has been framed, there has been a fatal tendency to slipshod diagnosis, and unfortunately the prospect of securing compensation has undoubtedly acted as an encouragement to the patient to make the most of his symptoms.

The outcome of the investigation is that so far as oscillation of the eyes is concerned this symptom has been proved to be connected with an insufficiency of light while at work. The phenomenon is based on the fact that in a condition of complete dark adaptation the peripheral parts of the retina are more sensitive than the central parts and the habit of macular fixation may be suspended or even lost. It is found however that even in cases where nystagmus is fully developed there is not necessarily incapacity. Frequently miners with oscillation remain at work entirely unconscious of their condition. In many cases, on the other hand, oscillation of the eyes involves apparent movement of objects, with dizziness and headache. If the disability remains at this stage the question of psychoneurotic factors does not arise. Often however it does not stop here, further developments occur, and what at first sight seemed to be an ocular disorder pure and simple takes on the aspect of a psychoneurosis—i.e., a condition which may be one of actual disability but one not amenable to modes of treatment familiar to the ordinary medical practitioner, and requiring knowledge of psychoneuroses in general and experience and tact in dealing with them.

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[1] Third Report of the Miners' Nystagmus Committee. Medical Research Council: Special Report Series No. 176. H.M. Stationery Office. 9d.

The report is accompanied by two appendices, the first by Prof. Millais Culpin containing an analysis of 36 cases receiving compensation examined by himself, in which he has made note of the nervous conditions of the patients. In only 3 of these cases was oscillation evident while the patient was being talked to. In 11 it could be elicited by special motions of the eyes, and in 22 it was not seen at all. In almost all there were psychoneurotic symptoms such as irrational fears, present to a greater or less extent, and in this connexion Dr. Culpin points out that in coal mining the danger that actually exists of explosions and other catastrophes, may prey on the minds of some men more than others, making them peculiarly liable to a "nervous breakdown" of some sort, just as the terrible conditions to which soldiers in the trenches were subject rendered some more than others liable to "shell shock." Only in two cases did he suspect actual malingering, and this fact is important as otherwise the uninstructed might fail to realise that these nervous symptoms actually do involve a disability calling for proper treatment. The important point is that treatment to be effective must be mental, and that to provide hope of compensation dependent on continuance of the disability is the very worst form of mental treatment possible. This point is further illustrated in the second appendix by Dr. T. L. Llewellyn. "The incidence of miners' nystagmus in individual pits is very irregular," he says, "and is largely influenced by conditions of unrest, local dispute, and custom. The looseness of the scheduled definition allows the inclusion of men either not suffering from the disease or not incapacitated by the disease." As to the good effect of improved lighting there can be no doubt. Between 1920 and 1928 the proportion of electric to oil lamps was increased from 28·0 to 47·0 per cent., but that was not enough. A poor electric lamp is a worse source of illumination than a poor oil lamp, and whole installations of electric lamps have been rendered useless by lack of attention to batteries. In many cases the electric lamps gave a poor light and did not last the shift out. More recent reports of mines where electric cap lamps have been provided or electric hand lamps of as much as 4·5 candle power show much more favourable results.

The main recommendation of this important report, in its final words, is "that the practical treatment of the disease, from an administrative point of view, should consist in the elimination of a hopeless dependence on compensation by the provision of opportunities for work of some kind, the end in view being complete restoration to full work underground, under conditions of proper illumination, even if this has to be preceded by a period of work in daylight."

COLDS AND INFLUENZA

Influenza is once again in our midst; the season of the common cold is reaching its acme. Such a time is a propitious one to pass in review the endeavours which are being made to gain a more intimate knowledge of these conditions. And since so much turns on a precise understanding of the ætiology of any disease it is this aspect of the problem which should concern us primarily. In the past, as was only natural, investigations into the causation of the common cold were largely concerned with the incrimination of a cultivable bacterium. There has been no lack of these; the choice was embarrassing, as the composition of the anticatarrhal vaccine testifies. But no cultivable bacterium has been isolated from coryza, which was at once peculiar and common to all cases of this disease, and with the exception of man there was no suitable experimental animal on which to try out the various claimants. Further, the common cold, from the clinical point of view, appeared to be an entity, and this suggested that the different bacteria present in the nasopharyngeal discharge were merely secondary invaders, and that the prime cause had yet to be found. This impasse gave birth to the view that a filtrable virus was to blame, a view which recent work has gone a long way to confirm, and although Dochez and his colleagues in America were not the first to endeavour to provide experimental proof of this hypothesis, the thoroughness and care with which they approached this problem makes their work a landmark in this field of research.

Readers of The Lancet are already familiar with the work of Dochez,[1] and there is no need to review it again in detail. Suffice it to say that he and his colleagues envisaged in turn the ætiological significance of cultivable aerobic bacteria and filter-passing anaerobes, only to discard them; and then proceeded to demonstrate the possibility of reproducing typical colds both in chimpanzees and human volunteers by means of the filtered nasopharyngeal washings from spontaneous cases. P. H. Long and a team of workers[2] at the Johns Hopkins University have repeated these experiments using human volunteers only, and obtained similar results; and more recently C. H. Andrewes and

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[1] Dochez, A. R., Mills, K. C., and Kneeland, V.: The Lancet, 1931, ii., 517, 539.

[2] Long, P. H., Doull, A., J. Brown, J. M., and McComb, E.: Jour. Exp. Med., 1931, liii., 447.

W. G. Oakley,[3] at St. Bartholomew's Hospital, have had a like success. They, too, made use of human volunteers, and tested in all the filtered nasal washings from ten people with colds. Of these filtrates five proved active, and with them they produced typical colds in 15 out of 36 men inoculated, a proportion of success closely approximating that obtained by Dochez and by Long. Andrewes and Oakley were, however, unable to confirm Dochez's claim to have cultivated the virus. Cultures made by them according to Dochez's technique proved inactive when tested on 24 volunteers; and even Dochez, who came over to this country at the time, bringing with him his own cultures, was not any more successful, so that his claim to have grown the virus cannot yet be accepted. Yet the main portion of his work stands intact. The prime cause of the common cold is a filtrable virus.

With influenza progress has been less satisfactory. The difficulties encountered in the experimental investigation of the common cold are not less in the case of influenza; in fact they are even greater. The use of human volunteers in work on the common cold is one thing, their use for influenza quite another. There are several ætiological claimants in the field—filtrable virus, *Bacterium pneumosintes*, Pfeiffer's bacillus—the difficulty is to decide between them, and unless a suitable experimental animal is found progress will be held up indefinitely. With regard to specific prophylaxis in these two diseases, it must not be forgotten that the natural disease does not appear to confer much immunity—at best it is only short-lived—so too much must not be expected from artificial measures. There remains, however, prophylaxis against the secondary invaders which play an important part, especially in influenza, and this is catered for by the vaccines already in use.

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[3] Andrewes, C. H., and Oakley, W. G.: St. Bart.'s Hosp. Jour., Jan., 1933, p. 74.

ANNOTATIONS

DRUG AND ALCOHOL ADDICTION IN GERMANY

Until recently Germany has had a somewhat heavier drug problem to deal with than Great Britain, possibly because of her large land frontiers and possibly because of a temperamental factor. Dr. Paul Wolff, one of the two editors of the *Deutsche medizinische Wochenschrift*, who does much work on the drug and alcohol problem for the League of Nations, told the Society for the Study of Inebriety on Jan. 10th of the far-reaching effects of the new ordinance which came into force on April 1st, 1931. Statistics published in 1928 indicate that Germany had between 4000 and 6000 addicts out of a population of about 64,000,000, and that this figure included about 500 doctors. Germany has not the provision which this country has for depriving a doctor who is an addict of the right to prescribe dangerous drugs, but a measure to this effect is expected. The ordinance of 1931 restricts the right of prescribing opiates, and compels a doctor to keep a record of a larger prescription than 0·1 g. of morphia or 2 g. of opium daily. Heroin, which in Germany is called diacetylmorphine, seems to play very little part in that country; for some reason it has no attraction for the would-be addict. The law discriminates in favour of suppositories as against injections. Since the promulgation of this ordinance the consumption of morphia has been reduced by about 20 per cent. and that of opium by about 30 per cent. Similar restrictions aimed at the use of cocaine have resulted in a decrease of 50 per cent., and an additional drop in consumption is expected when the 1932 figures are available. Its use is confined now almost entirely to ear, nose, throat, and eye operations, subject to certain provisos. The pure substance is no longer supplied to the medical profession, and specialists have found that the modern substitutes are equally efficacious. Dr. Wolff states from personal observation that the illegal drug traffic in Berlin is very much on the wane.

The German authorities have also made a determined attempt to reduce alcoholism. The Licensed Premises Act of July, 1930, imposed restrictions on the granting of licences, defined opening and closing hours, and provided for the prohibition of the sale of spirits at certain times, such as pay-day and election days. The chief object of the measure was to prohibit the sale of alcohol to persons under 18 and intoxicated persons, and the sale of tobacco to children under 16; also to stop the practice of charging extra for meals at which no alcohol was drunk, and to forbid the sale of spirits on sports grounds and in gymnasia. The present consumption of spirits in Germany is only 20 per cent. of what it was in the first decade of the century, and the consumption of beer only 31 per cent. Chronic alcoholism is on the downward grade and delirium tremens has become very rare. The mortality from alcoholism in German hospitals is about one-third of what it was before the war. The whole treatment of inebriety throughout the country is systematically organised through the various temperance societies, and is carried out both in general hospitals and in special institutions administered by the State. Particular importance is attached to treatment in the early stages. The draft of the new German Penal Code contains provisions whereby a judge can enforce a withdrawal cure and order supervision of an inebriate. One of the best prophylactic measures, Dr. Wolff remarked, has been the raising of the price of alcoholic liquors by taxation in proportion to the alcohol content.

PROBLEMS OF DEVELOPMENT

All who are interested in fundamental biological problems, or are concerned with their bearing on related questions, should consider the authoritative work of Bernhard Dürken which has recently been made available in English.[1] Prof. Dürken is a supporter of the *Einheitstheorie*, and it is his subtle analysis of the claims of opposed views about the development of the organism which is of special interest. We have been presented in recent years with such exact experiment and accurate forecast by the geneticists and investigators of heredity, that almost unconsciously we have come to look upon the development of the whole organism as in the keeping of chromosomes, built up of genes which are the actual producers of the various characteristics. The idea of the chromosomal ordering of the organism from its commencement, however, has not seemed entirely satisfactory. It does not fit in with the facts of wider experience: for example, such phenomena as sex-reversal, regeneration, and the results of experimental transplantation and the like on young embryos were apparently firmly established, but would be incompatible with the theory that the development of the individual characteristics are fixed ab initio. Although interaction between chromosomes and their environment be brought in, the incompatibility must remain so long as the constitution of the chromosomes is considered to be fixed from the time of fertilisation. It is, then, with something like relief that one encounters the effort of Prof. Dürken to adjust the differences in ideas on the nature of development of the geneticists and of the experimental embryologists. He shows that the results of these last prove the epigenetic nature of development, opposed to the (theoretical) development on a purely chromosomal basis, which, as he maintains, is essentially preformistic in character. The way is open now for readjustment. It is surely reasonable to hold that if any experimental work can throw light on the processes of development, experimental embryology should be able to do so; and this work certainly favours the epigenetic nature of the processes. Thus the rigid chromosomal direction of development is automatically put out of court. On the other hand, genetical theory was introduced for students of heredity, and as a working theory has brilliantly served its purpose. Cytological research has shown that the theory may be nearly true within its own field; but that field is not the general development of the organism. Chromosomes exist in fact, although they do not have continuous existence, and, like all intracellular structures, must undergo epigenetic change. The gene, the lineal descendant of Weismann's determinant and, like it, of more than doubtful material existence, is also subject to epigenetic change, whatever its nature. The conception of this abstract or material gene as the last term in an epigenetic series, expressing itself in the final "characteristic," is one that fits in well. The final philosophic sections of this work, at any rate, give the reader more satisfaction than can be found in the developmental theories based on rigid chromosomal foundations. A word is due to the translators. Like Mundinus, they say that they have not aimed at elegance of style, wishing rather to preserve or reproduce the author's thought without gloss. There is no internal indication of want of elegance, though the English is clear and simple.

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[1] Experimental Analysis of Development. By Bernhard Dürken, professor in the University of Breslau. Translated by H. G. and A. M. Newth. London: George Allen and Unwin, Ltd. 1932. Pp. 288. 14s.

THE PROGENY OF SCHIZOPHRENICS

It is common knowledge among psychiatrists that schizophrenics are often childless, but this general impression lacks the support of extensive and accurate statistical analyses. In an attempt to contribute precise information on this point Dr. A. J. Nissen,[1] who is attached to the Norwegian Public Asylum of Rotvoll, has investigated the number of children born to 322 schizophrenics treated at the asylum between July, 1929, and April, 1932. The main facts emerging from this study were the comparative rarity of marriage in this class, the comparative sterility of these few marriages, and the high ratio of illegitimate to legitimate children born to schizophrenics. Altogether only 226 children, legitimate and illegitimate, were born to these 322 patients, who were classified in age-groups to facilitate their comparison with corresponding age-groups in the general population. The census of 1920 provided a not altogether satisfactory control material, as the birth-rate in Norway has declined between this year and 1932. While in the general population in 1920 only 9·43 per cent. of the married women were childless, this was the case with 24·4 per cent. of the 41 married schizophrenic women. Again, in the general population there was an average of 4·02 children every marriage, whereas this average was as low as 2·67 for the married schizophrenics. These figures are, of course, too small to warrant far-reaching conclusions; and there are other sources of error frankly discussed by Dr. Nissen. But with these reservations he has made out an interesting case for the further study of schizophrenia on the same lines. Indirectly such information, thus obtained, may throw light on the part played by heredity in the genesis of schizophrenia.

MELILOT AND MALARIA

For many years it has been popularly supposed in many regions of Africa and Asia that certain species of melilot, a kind of clover, can usefully be grown as a prophylactic against malaria. It will be remembered that Grassi in his closing years raised the important question of the prevalence of anophelines in association with the purity of the water-supply. "Brackish water," he said, "increases the virulence of the malarial parasites." But during his travels in the Argentine he noted that the highly scented blossoms of the scented clover (*Melilotus altissima*) were much frequented by anophelines, which fed upon their juice, and that this plant was not present in malarial districts. The juice of this clover contains a glucoside, coumarin, and he thought it possible that this substance might play a part in the insect comparable to that which quinine plays in man. It will be remembered too that the late Sir William Willcocks tentatively attributed the comparative freedom of Egypt from malaria to the influence of this plant. In 1920 Dr. F. d'Herelle was appointed director of the bacteriological service of the International Quarantine Council of Egypt, and took with him a quantity of seeds of the scented clover known by the Spaniards as "trebol de olor"; but owing to the prevalence of clover in Egypt he was unable to make any extensive experiments with it. Two years ago Stratman-Thomas tried to verify the clover hypothesis in the Mississippi valley. He selected fields where alfalfa had been planted from one to three years, and made an index of the incidence of malaria at various distances from these fields, but he could not find any significant difference, and concluded that the action of clover was nil d'Herelle[1] himself is unable to accept this negative experiment, and considers that observations made in various regions of the world seem to indicate that the primary cause of "anophelism without malaria" is the presence of plants of the genus melilotus, or of some other genus having the same property and containing coumarine in their honey. The outlook for this theory, nevertheless, does not seem to be promising. Those who have worked on malaria in the Delta of Egypt are aware of the existence of endemic foci of the disease in close contact with the clover crops. The explanation of the absence of malaria from the greater part of the Delta appears to lie in the fact that owing to the prevalence of fish in the main canals and the excellent system of drainage, there are no adequate breeding-places or hibernating-places for anopheline mosquitoes of the appropriate species.

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[1] Nordisk Medicinsk Tidskrift, Dec. 3rd, 1932.

[1] Amer. Jour. of Hyg., 1932, xvi., 609.

B. SUIPESTIFER AS A CAUSE OF DISEASE IN MAN

Bacillus suipestifer, a member of the salmonella group, was first brought into prominence under the name of the hog-cholera bacillus (*Salmonella choleræsuis*, as it is often called in America) as the cause of hog cholera or swine fever. However, while this bacillus is frequently isolated from cases of swine fever, it is now regarded as being not the causal organism but a secondary invader. Much confusion has been caused by a plurality of names, and especially by the use of the term *B. suipestifer* without exact serological definition; but actually this organism is only rarely found to be a cause of human disease. Some continental investigators go so far as to question its pathogenicity to man, while W. G. Savage and P. B. White [1] in 1925 regarded it as an organism of low virulence to man, which can set up an outbreak of food poisoning "only under exceptionally favourable conditions." Further experience, however, showed that it was less rare than had been supposed, and W. M. Scott in 1926 described four separate outbreaks of food-poisoning in this country, in which over 100 cases in all of gastro-enteritis occurred, one being fatal, and in which the bacillus incriminated was *B. suipestifer* (sub-type 2). Savage and White had previously included one outbreak in their series, while at least three outbreaks have been described in U.S.A. These facts seem to establish this organism as a cause, though not a frequent cause, of food-poisoning outbreaks. As usual with the salmonella group, the problem is complicated by further differentiation into sub-types, and there are now three types which have to be considered. One sub-type, generally known as *B. paratyphosus* C, is associated with human disease of the paratyphoid fever type, but, with rare exceptions, is found only in the East, in places such as India, Mesopotamia, and the Balkans. It is separable from, but closely allied to, the two other types. The true suipestifers fall into two sub-types. Sub-type 1, the *American* type, is almost exclusively confined to that continent, and is the type isolated from American swine. It has serological differences and cultural distinctions, such as its failure to blacken lead acetate and its inability to ferment dulcite and arabinose. Sub-type 2 is the Western European type. This is the type which is isolated from swine fever infected swine in this country, and is the one associated with suipestifer food-poisoning outbreaks. This type regularly and rapidly blackens lead acetate and ferments both dulcite and arabinose. That *B. suipestifer* may cause sporadic disease other than food-poisoning in this country has recently been shown by Nabarro and his collaborators,[2] who cultivated this organism from the joints of two children suffering from arthritis. Several isolated cases of paratyphoid fever-like nature due to this bacillus have also been reported in U.S.A.

The story is carried a stage further in a valuable paper by A. G. Kuttner and H. D. Zepp which has just been published.[3] During the winter of 1931–32, within a period of four months, seven children with ages ranging from 7 months to 6 years were admitted to the Harriet-lane Home, Johns Hopkins Hospital, Baltimore. All the cases were entirely unrelated. They were admitted for acute febrile disease of paratyphoid fever type, but showing considerable differences; none was of food-poisoning type. In every child there was definite blood infection, *B. suipestifer* being isolated from the blood. It is of interest that in only one case, in spite of repeated examination, was the organism isolated from the fæces or from the urine. The course of the disease was mild, there were no recurrences or complications, and all the patients recovered after a period of 14 to 29 days in hospital. The bacteriological investigations were carried out with great care. The fact that six of the strains isolated were found to belong to sub-type 2 and one to sub-type 1 is of great interest in view of the known geographical distribution of these three sub-types.

From the different cases recorded we now know that *B. suipestifer* (sub-type 2) can cause disease in man, either in the form of an outbreak of food-poisoning or as illness of the type of paratyphoid fever. It must still be regarded as a rare cause of human illness, but further experience may show a greater prevalence than the reported cases suggest. The sub-type of salmonella found is of importance from the point of view of causation. In the cases of Kuttner and Zepp no sources of infection could be found, but they suggest as most probable infection from specifically infected pork. Since *B. suipestifer* is an organism often associated with swine fever, and undetected cases of this disease may be sold as food, it cannot be excluded as a potential source of infection. The likelihood that it was actually the causal organism in the cases described by Kuttner and Zepp is discounted by the fact that in all but one child the strains were of sub-type 2, whereas the ordinary type in swine in America is sub-type 1. In England this discrepancy does not exist, since all the positive types isolated by White [4] were of sub-type 2, and therefore of the same sub-type as those found in food-poisoning outbreaks. Obviously still more detailed study is necessary before causal factors can be fully established. All that can be said at present is that suipestifer strains from pigs, and probably also from other animals, seem to be of rather low virulence to man, though potential causes of human infection.

THE RESPIRATION OF NORMAL CHILDREN

THE increasing interest taken in the physiology of respiration and its application to clinical problems [5] is illustrated by a recent paper [6] from the University Children's Clinic in Amsterdam. Dr. M. de Bruin, who was investigating with a special type of recording spirometer various problems of basal metabolism in normal children, found that analysis of the curves obtained gave some indication of the normal respiratory functions of the child. In a group of 50 normal children he paid attention to four factors: (1) the rate of respiration over a period of 18 minutes; (2) the depth of respiration, that is the tidal air, from an average of a hundred breaths; (3) the minute volume; and (4) the relationship between respiration and basal metabolism. Great variability was found in the rate of respiration; in 26 boys of ages between 2½ and 10 years the rate varied between 14 and 40 with an average of 23 per minute. The difference on successive days for the same child was only slight, and no reason could be found for producers of the various characteristics. The idea of the chromosomal ordering of the organism from its commencement, however, has not seemed entirely satisfactory. It does not fit in with the facts of wider experience: for example, such phenomena as sex-reversal, regeneration, and the results of experimental transplantation and the like on young embryos were apparently firmly established, but would be incompatible with the theory that the development of the individual characteristics are fixed ab initio. Although interaction between chromosomes and their environment be brought in, the incompatibility must remain so long as the constitution of the chromosomes is considered to be fixed from the time of fertilisation. It is, then, with something like relief that one encounters the effort of Prof. Dürken to adjust the differences in ideas on the nature of development of the geneticists and of the experimental embryologists. He shows that the results of these last prove the epigenetic nature of development, opposed to the (theoretical) development on a purely chromosomal basis, which, as he maintains, is essentially preformistic in character. The way is open now for readjustment. It is surely reasonable to hold that if any experimental work can throw light on the processes of development, experimental embryology should be able to do so; and this work certainly favours the epigenetic nature of the processes. Thus the rigid chromosomal direction of development is automatically put out of court. On the other hand, genetical theory was introduced for students of heredity, and as a working theory has brilliantly served its purpose. Cytological research has shown that the theory may be nearly true within its own field; but that field is not the general development of the organism. Chromosomes exist in fact, although they do not have continuous existence, and, like all intracellular structures, must undergo epigenetic change. The gene, the lineal descendant of Weismann's determinant and, like it, of more than doubtful material existence, is also subject to epigenetic change, whatever its nature. The conception of this abstract or material gene as the last term in an epigenetic series, expressing itself in the final "characteristic," is one that fits in well. The final philosophic sections of this work, at any rate, give the reader more satisfaction than can be found in the developmental theories based on rigid chromosomal foundations. A word is due to the translators. Like Mundinus, they say that they have not aimed at elegance of style, wishing rather to preserve or reproduce the author's thought without gloss. There is no internal indication of want of elegance, though the English is clear and simple.

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[1] Med. Research Council, Spec. Rep. Series No. 91, 1925.

[2] THE LANCET, 1929, ii., 868.

[3] Bull. Johns Hopkins Hosp., December, 1932, p.

[4] Med. Research Council, Spec. Rep. Series No. 103, 1926.

[5] See THE LANCET, 1932, ii., 687.

[6] Acta Pædiatrica, 1932, xiv., 1.

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[2] THE LANCET, 1929, ii., 868.
[3] Bull. Johns Hopkins Hosp., December, 1932, p.
[4] Med. Research Council, Spec. Rep. Series No. 103, 1926.
[5] See THE LANCET, 1932, ii., 687.
[6] Acta Pædiatrica, 1932, xiv., 1.

THE PROGENY OF SCHIZOPHRENICS

It is common knowledge among psychiatrists that schizophrenics are often childless, but this general impression lacks the support of extensive and accurate statistical analyses. In an attempt to contribute precise information on this point Dr. A. J. Nissen,[1] who is attached to the Norwegian Public Asylum of Rotvoll, has investigated the number of children born to 322 schizophrenics treated at the asylum between July, 1929, and April, 1932. The main facts emerging from this study were the comparative rarity of marriage in this class, the comparative sterility of these few marriages, and the high ratio of illegitimate to legitimate children born to schizophrenics. Altogether only 226 children, legitimate and illegitimate, were born to thes 322 patients, who were classified in age-groups t facilitate their comparison with corresponding age groups in the general population. The census o 1920 provided a not altogether satisfactory contro material, as the birth-rate in Norway has decline between this year and 1932. While in the genera population in 1920 only 9·43 per cent. of the marrie women were childless, this was the case with 24 per cent. of the 41 married schizophrenic women Again, in the general population there was a average of 4·02 children every marriage, wherea this average was as low as 2·67 for the marrie schizophrenics. These figures are, of course, to small to warrant far-reaching conclusions; and ther are other sources of error frankly discussed b Dr. Nissen. But with these reservations he ha made out an interesting case for the further stud of schizophrenia on the same lines. Indirectly suc information, thus obtained, may throw light o the part played by heredity in the genesis o schizophrenia.

MELILOT AND MALARIA

For many years it has been popularly suppose in many regions of Africa and Asia that certai species of melilot, a kind of clover, can usefully b grown as a prophylactic against malaria. It wi be remembered that Grassi in his closing years raise the important question of the prevalence of anoph lines in association with the purity of the wate supply. "Brackish water," he said, "increases th virulence of the malarial parasites." But durin his travels in the Argentine he noted that the highl scented blossoms of the scented clover (*Melilot altissima*) were much frequented by anopheline which fed upon their juice, and that this plant wa not present in malarial districts. The juice this clover contains a glucoside, coumarin, and h thought it possible that this substance might pla a part in the insect comparable to that which quinin plays in man. It will be remembered too th the late Sir William Willcocks tentatively attribute the comparative freedom of Egypt from malaria t the influence of this plant. In 1920 Dr. F. d'Herel was appointed director of the bacteriological servi of the International Quarantine Council of Egyp and took with him a quantity of seeds of the scente clover known by the Spaniards as "trebol de olor" but owing to the prevalence of clover in Egypt h was unable to make any extensive experiments wi it. Two years ago *Stratman-Thomas tried to* veri the clover hypothesis in the Mississippi valley. H selected fields where alfalfa had been planted fro one to three years, and made an index of the inciden of malaria at various distances from these fields, bu he could not find any significant difference, an concluded that the action of clover was ni d'Herelle[1] himself is unable to accept this negati experiment, and considers that observations mad in various regions of the world seem to indicate tha the primary cause of "anophelism without malaria is the presence of plants of the genus melilotu or of some other genus having the same propert and containing coumarine in their honey. Th outlook for this theory, nevertheless, does not see to be promising. Those who have worked on malar in the Delta of Egypt are aware of the existence endemic foci of the disease in close contact with th clover crops. The explanation of the absence malaria from the greater part of the Delta appea pasteurisation, were defeated. It would then have been possible to ask for legislation on the non-controversial questions, but the city council, which approved of the Bill by a large majority, preferred to submit its proposals to a poll of the local electors. The result was disastrous. Anxiety to destroy particular clauses united the forces of the property-owners' association, the ratepayers' association, and the local branch of the National Farmers' Union, and the electors were freely advised that they would be wise to vote against the whole Bill if they objected to any part of it. Although the poll of over 45,000 was unexpectedly heavy, it represented only about 14 per cent. of the total electorate, and because of this general apathy the strenuous and artificially united opposition was able to win the day. Of the 15 clauses one was approved—and it had nothing to do with local government. Yet even the permission to the Royal Infirmary to control certain land and establish clinics and paying wards was granted only by the narrow majority of 1180, and it is reasonable to think that the 21,000 persons who voted against this entirely non-controversial scheme formed a group which was opposing all the items, regardless of their individual merits. It was clear, as the Lord Mayor said afterwards, that reason scarcely entered into the voting, and many people will agree with Alderman G. F. Titt, that the result was "a triumph of organised vested interests against good government."

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[1] Nordisk Medicinsk Tidskrift, Dec. 3rd, 1932.

[1] Amer. Jour. of Hyg., 1932, xvi., 609.

Dr. Veitch Clark's scheme was an attempt to put in practice a policy—originally outlined, we believe, by Dr. W. G. Savage—that has received full support in our editorial columns.[1] The case for and against pasteurisation of milk has been argued at length in THE LANCET, and during the last few years we have published the reports on which its Manchester opponents chiefly relied. The arguments remain much the same when adapted to the circumstances of this particular locality. At present 75 per cent. of Manchester's milk is pasteurised, 5 per cent. is sterilised, and the remaining 20 per cent. is said to be raw. Prof. H. B. Maitland states[2] that of several hundred samples of unpasteurised milk tested in his laboratory during one year 14 per cent. contained living tubercle bacilli. It is estimated by the public health committee that 40 per cent. of the herds react to the tuberculin test and 2 per cent. of the milch cows have tuberculous udders. While eradication of tubercle from these herds is admitted to be the ideal it is considered impossible at present because of its enormous cost. Meanwhile, according to the chairman of the public health committee, there has been during the last five years an average of 289 cases of non-pulmonary tuberculosis among Manchester children annually, about half of which could be traced to bovine infection. Municipal expenditure, alone, in treating 130 cases for one year is put at £15,000 to £16,000. The answers given to such arguments were many. What is needed, the farmers say, is greater consumption of milk; children prefer it raw, and it is the small retailer of raw milk who keeps the price down. Fresh milk, moreover, is more nutritious, since pasteurisation precipitates calcium and destroys vitamins—a statement which may be read in the light of the Ministry of Health's considered pronouncement that pasteurisation, subject to careful operation and scientific control, "ensures a milk which not only is safe for consumption but also retains its food value practically unimpaired by the heat to which it is subjected." From a letter in the *Manchester Guardian* we learn that "if the Reading results[3] are a criterion of what would happen when everyone was fed on pasteurised milk, the race would soon die out." It was these same results, presumably, that were held to justify distribution of posters and leaflets saying: "Pasteurisation will kill your babies." As propaganda we should prefer the outburst of one of the aldermen, who insisted that people should be able to choose the kind of milk they prefer, and that it is an infringement of the public liberty to be forced to drink such milk as the corporation desires. But, after all, was there really any need for propaganda? As a critic of the farmers and their organisation pointed out, it seems possible that they were once more backing the wrong horse and protesting against their real interests. By opposing the proposals, he said, they appear to enlightened urban opinion as reactionary, which is far from wise at present; the alternative to pasteurisation would probably be a tightening-up of the administration of the Milk and Dairies Order, which would drive many of the smaller men out of milk production; and all this fuss is being made chiefly for the benefit of the producer retailer, who has always been the worst offender in undercutting prices.

If we dismiss the Manchester opposition lightly it is because on the whole the level of that opposition was low. Among the more reasonable criticisms of the scheme was the suggestion that the problem was national and should be treated nationally. But it was one of the merits of Dr. Savage's plan that it avoided the agonies arising from legislation which applies to the whole country, and that it correspondingly lightened inhibitory pressure on the small producer. Compulsory pasteurisation is not a complete and satisfactory solution of the milk problem, and its application anywhere must not be allowed to interfere with attempts to cleanse the milk-supply. At the same time, if rightly used, it offers a partial solution. The time is overripe for an English experiment comparable with the experiment of Toronto, where bovine tuberculosis has been practically abolished; and Manchester, with her record of leadership in public health, is a proper place for this important enterprise. We hope she will think again.

Sir Thomas Horder, who was created baron at the New Year, has taken the title of Lord Horder of Ashford in the county of Southampton.

INDEX TO "THE LANCET," VOL. II., 1932

THE Index and Title-page to Vol. II., 1932, which was completed with the issue of Dec. 31st, is now in preparation. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 7, Adam-street, Adelphi, London, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL.—A Post-graduate course in orthopædic surgery will be held at this hospital, 234, Great Portland-street, London, W.1, and Stanmore, Middlesex, from March 6th to 18th. Full particulars may be had from the hospital.

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[1] THE LANCET, 1931, i., 1037.

[2] Reported in Manchester Guardian, Jan. 10th, p. 11.

[3] THE LANCET, 1931, i., 662.

a rate of, say, over 30 in certain circumstances. In the 24 girls of the series the same constancy of rate for the individual child was found, while the rate from child to child varied from 14 to 35 with an average of 23. A similar gross variation from child to child, with a remarkable constancy for the same child, was found in relation to the tidal air. The smallest value found was 174 c.cm., the largest 378 c.cm.; in general the children with the rapid rates had lower tidal air values. One exception showed a high-frequency and big tidal air volume on one day with a lower frequency and small tidal air volume at a later date, but no cause could be found for this. Despite the general finding of inverse variation between tidal air and frequency the minute volumes in the series showed wide variations from eight litres to four litres. Dr. de Bruin suggests as a possible explanation that some of the higher values occur with very shallow breathing, a high minute volume being associated with poor ventilation in the alveoli. This was put forward in a paper from Buenos Aires, recently mentioned in these columns.[7] It is also important in any consideration of minute volume to relate this to the oxygen requirements of the body, as taken alone the ventilation has no absolute value unless body requirements are correlated. Dr. de Bruin consequently compared his estimates of minute volume with basal metabolism findings. The relation, however, was not very close. Of six cases with large minute volumes four showed a basal metabolic rate above the standard, while two were below. In 14 children with low minute volumes seven had raised metabolic rates, six showed lowered values, and one agreed with the standard rates. These findings do not altogether agree with the results of other workers. This may be in part explained by the type of spirometer used and the fact that tidal air was measured as depth of normal inspiration rather than depth of normal expiration. The number of cases investigated was small. Nevertheless Dr. de Bruin's findings are of intrinsic interest and illustrate well the close connexion between physiological and clinical research.

DANGEROUS DRUGS: A MODEL CODE

IN anticipation that the Convention of 1931 dealing with the limitation of the manufacture of dangerous narcotic drugs will be duly ratified and come into force this year, a model code has been drawn up by the Opium Advisory Committee of the League of Nations and circulated. It is hoped that this will expedite ratification and enable the various governments to frame the necessary legislative and administrative measures for application of the new Convention. During the discussion by the Council of the model code, Mr. Wellington Koo, the representative of China, remarked that it was in the matter of dangerous drugs alone that the League of Nations had succeeded in drawing up a model administrative code. He added "that a closer approximation to world uniformity of legislation had been reached in the field of dangerous drugs than in most other fields of international activity." M. de Madariaga, representing Spain, recalled that League experience in regard to narcotic drugs proved that the real source of the evil was the manufacture rather than the traffic, and suggested that this experience might usefully be communicated to the disarmament conference, where control of manufacture was no less important than control of traffic. The draft model code contain suggestions as to the connotation of "narcotic drugs," "reserve stocks," and "government stocks," and deals with methods for determining the annual estimates to be furnished by each government which form the basis of the plan for limitation of manufacture. It has made clear from the official statistics available that the stocks in existence at the end of 1931 were sufficient to meet all the scientific and medical needs for at least a year. As regards illicit traffic, it is interesting to note that in 1931 the United States of America were the chief victims of such traffic. The quantities there seized in that year were of raw opium 1389 kg., of morphine 258 kg., of heroin 238 kg., and of cocaine 5 kg. The Council of the League meets on Jan. 23rd, when it is hoped that progress may be reported as regards ratification of the Limitation Convention; and the Central Opium Board will hold its next meeting at Geneva on Jan. 25th.

CARBON MONOXIDE POISONING AND MOTOR ACCIDENTS

ON another page Dr. J. S. Owens writes on the risk of carbon monoxide poisoning which arises from the general use of motor-cars. It is, as he says, hard to be sure what damage may be done to people exposed to exhaust gas in small doses over long periods, and in France the statement has lately been made that drivers of public service vehicles suffer a degree of chronic poisoning which increases their liability to accidents. Cazeneuve, Tanon, and Neveu,[1] who have already written on the subject in the hope of ensuring that the examination of drivers in the provinces shall be carried out in accordance with the law, have made 4000 examinations and say that one driver out of every four shows unequal dilatation of the pupils. They have carefully eliminated any possibility of syphilis, and ascribe the symptom to an intoxication of the grey matter of the medulla. Testing 15 of their friends, they found that ten showed inequality after driving a closed car with all the windows shut; mydriasis, as in the public service drivers, was always on the left, and return to normal took place after intervals varying from one to eight hours. Inhalation of petrol fumes produced similar effects in certain subjects. In three cases of accident where the driver had complained of faintness just before the collision, they found obvious leakage of exhaust gas through the floor boards, and consider that many mishaps must be due to this cause. They think that certain drivers are more sensitive than others, and that alcohol or over-eating predisposes to this form of intoxication.

MANCHESTER AND PASTEURISATION

MANCHESTER has temporarily lost her reputation for sound sense. About a year ago the public health committee approved the proposal of Dr. R. Veitch Clark, the medical officer of health, that the city should take powers to insist that all milk—other than Certified and Grade A (tuberculin-tested)—sold within its borders should in future be pasteurised. This proposal was rightly accepted by the city council and was embodied in one of fifteen clauses in a new Corporation Bill. The Bill, before going to Parliament, had to be submitted to a town's meeting, and the opposition to some of its provisions was so well organised that five of the clauses, including compulsory cent. of carbon monoxide in the exhaust gases, and this makes them a very deadly poison unless rapidly diluted.

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[7] THE LANCET, 1932, ii., 1345.

[1] Bull. de l'Acad. de Méd., 1932, cviii., 1624.

We have had some experience in England also in vehicular tunnel ventilation, and an investigation into the ventilation of the Blackwall and Rotherhithe tunnels has been made by Mr. C. J. Regan, and published in the L.C.C. Annual Report for 1930 (Part III., p. 271). In these tunnels the maximum permissible concentration of carbon monoxide was fixed at 2 parts in 10,000.

CARBON MONOXIDE IN CITY STREETS

It is found that the air in busy city streets contains a measurable quantity of CO, averaging 0·8 parts per 10,000 in 14 towns of the U.S.A., about 0·5 in the street air in Chicago, and ranging from this to about 0·15 in suburban districts. Samples taken by Mr. Regan in central London, during the winter, gave 0·3 parts per 10,000. The concentration in the open street thus rarely approaches the danger limit, but it must not be forgotten that although a dangerous concentration may be rare, it does not follow that it never occurs.

In all cases of atmospheric pollution we have been accustomed to rely upon the scavenging action of the wind to clear away the impurities. This is the case with the smoke from our chimneys, grit and fumes from factories, as well as the fumes and poisonous gases permitted to escape from the exhausts of motor vehicles. Now it is true that there is usually some wind to carry these away; also that a concentration of vehicles at any particular place may not occur at the moment when the wind has failed. Again, we have the possibility of abnormalities in the vertical temperature gradient preventing the upward escape of fumes, but what we perhaps do not realise is that all the conditions favouring high concentration may some time occur together.

For example, a long street of high buildings may be crowded with motor vehicles owing to some hold-up of the traffic. This may happen on a day when the wind has fallen and when the temperature gradient overhead does not encourage the upward escape of hot gases. In such circumstances it appears possible that the concentration of poisonous gases might become sufficiently high to be dangerous. It was coincidence of certain conditions which brought about the accident in the Liberty tunnels.

The affinity of hæmoglobin for carbon monoxide is 300 times as great as for oxygen. Hence, in the presence of any particular concentration, the CO will be seized in preference to the oxygen, and the effect will be to produce a condition of the blood in which a definite saturation value of CO will be reached. It would seem, therefore, that however long the exposure to air containing carbon monoxide, the degree of saturation of the blood can never exceed a certain value corresponding to the concentration in the air. This does not, however, preclude the possibility that low concentrations of CO may be injurious when breathed for long periods.

Reference has been made to the use of heavy oil engines such as Diesel engines, and although these have not yet come into general use, there is a general tendency in that direction, and it is interesting to note that the exhaust from such heavy oil engines usually contains a very small proportion of carbon monoxide under normal running conditions, certainly much lower than that produced from petrol engines.

THE EGYPTIAN LUNACY REPORT[1]

THE Lunacy Division Report for the year 1931, made to the Egyptian Ministry of the Interior and issued from the Public Health Department, reaches us a year later than the events which it chronicles. The report differs in certain respects—one, in particular, to which detailed attention must be drawn—from the reports previously issued. It is very brief, and brevity is no disadvantage unless it is obtained by the omission of matter pertaining to the subject. But it is a little surprising that the information from an important organisation, responsible for the treatment of 5262 cases in the year, and dealing with a resident insane population of 3227, should be considered to be adequately afforded in five and a half pages of text, consisting mostly of tabular statements. The shortness of the report has led to exclusion of the information formerly furnished as to the cost of new additional buildings and their maintenance; as to the number of seriously injured persons admitted; and as to the forms of insanity of the insane criminal patients; the religions and races of the admissions; their monthly distribution and occupations; the nationalities of the general paralytics, and the distribution of the pellagrins. No details of autopsies, or of the nature of the 17 accidents recorded are given.

It is stated that the death-rate calculated on the total number treated has risen from 5·5 in 1928 to 7·1 in 1931, a rise of 29 per cent. The value of the explanation suggested for this increase—viz., the feeble physical condition of some of the admissions—is discounted by the fact that the classification of admissions into "good," "poor," and "very bad," depends a good deal on the personal equation of the reporter, and this may vary with changing observers. The high death-rate among the chronic cases suggests defects in the nutritional value of the food, or some general factor which could affect all the inmates. A comparison of the death statistics of the year 1928 with those of 1931 shows that deaths from pulmonary diseases and tuberculosis rose from 40 in 1928 to 73 in 1931; from general paralysis, from 11 to 38; from pellagra, from 43 to 66; from senile decay, from 12 to 28; from kidney disease, from 18 to 40; from epilepsy, from 6 to 20 In all, these six categories account for an increase of 135 deaths The significance of some of these rises seem to deserve study. In comparing the death-rate of 1931 with that of previous years, the number of deaths of addicts should have been stated, and their figure deducted from the total number of deaths; a corresponding deduction should, of course, have been made from the total number under treatment; the death-rate of the insane, calculated on these reduced figures, would then have been comparable with that of previous years.

The reduction in the number of pellagrins admitted is worthy of note, the number having fallen from 189 in 1923 to 53 in 1931, a figure actually less than the number of deaths from pellagra during the year 1931 (66). It would be of great interest to know whether there has been noticed a corresponding diminution in the prevalence of pellagra in Egypt generally. If so, can the reason be found in any change in the diet of the fellaheen, perhaps in an increased consumption of wheat instead of maize?

The most outstanding event of the year, in the

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[1] Lunacy Division Report, including the Mental Hospitals of Abbâssiya and Khanka and Khanka Criminal Asylum. Cairo: Government Press. 1932. P.T.8.

SPECIAL ARTICLES

CARBON MONOXIDE POISONING FROM MOTOR-CAR FUMES *

By J. S. Owens, M.D. Dub., A.M.Inst.C.E., M.I.Mech.E.

SUPERINTENDENT OF OBSERVATIONS ON ATMOSPHERIC POLLUTION, DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

Public attention for some time past has been directed towards the danger of poisoning from the carbon monoxide fumes emitted in motor-car exhaust gases. It is well known that carbon monoxide is an extremely poisonous gas, but there is still some difference of opinion as to whether a chronic form of carbon monoxide poisoning may not exist which has not yet been recognised as such.

Tables of permissible concentration of CO in air are available based on different authorities. For example, the following is from Yandell Henderson and H. W. Haggard [1] :—

Concentration.	Carbon monoxide per cent.
Allowable for an exposure of several hours ..	0·01
Can be inhaled for one hour without appreciable effect..	0·04–0·05
Causing a just appreciable effect after one hour's exposure	0·06–0·07
Causing unpleasant but not dangerous symptoms after one hour's exposure ..	0·1 –0·12
Dangerous for exposure of one hour	0·15–0·20
Fatal in exposure of less than one hour ..	0·4 and above.

Another method of approach, for which Prof. Henderson is responsible, takes into account the time of exposure as well as the other factors. He has evolved the following method of estimating the effects of CO concentration :—

If x is the number of units of CO per 10,000 of air,
t is the number of hours exposure,
c is a factor which is 1 for a man at rest and 2 for a pedestrian—
then if the product
ctx lies between 0 and 3, no ill effects are felt.
approaches 6, slight ill effects are felt.
" 9, headaches are produced.
" 15, danger to life is incurred.

It is probably true that smaller concentrations than those mentioned, if breathed for a sufficiently long period, would be injurious, and it is quite probable that many of the headaches from which people in closed cars suffer are due to the leakage of exhaust fumes to the inside of the car.

ROAD TUNNELS AND GARAGES

Attention was first prominently drawn to the danger from exhaust fumes by an accident which occurred on May 10th, 1924, in the Liberty tunnel, Pittsburgh.[2] This is a tunnel 5889 ft. long, consisting of two tubes, 26 ft. wide at the floor and 20 ft. high, both lined with concrete, and straight. When the tunnels were constructed they were operated for about seven months without mechanical ventilation. Then an accident occurred which held up the vehicles in the tunnel, the CO concentration rapidly increased up to 25 parts in 10,000, and a number of people were partially asphyxiated. Shortly after this steps were taken to install mechanical ventilation of the "transverse" type, in which the inlet for fresh air is in a duct along the floor with lateral openings, while the exhaust is by a duct along the roof with similar lateral openings. This transverse method removes the impurity from a particular point of the tunnel without having to draw it along over any considerable length of tunnel as would be the case if it were ventilated from the end.

It was found that the average amount of carbon monoxide produced per minute per motor vehicle in this tunnel was about half a cubic foot, and it was concluded that an average pollution of 3 parts, with a maximum of 6 parts per 10,000, should not be exceeded. The transverse method of ventilation was fully developed for other American tunnels, and has been applied in the Holland vehicular tunnel under the Hudson. Here a standard of 4 parts per 10,000 was at first allowed, but it was subsequently reduced to 2½ parts per 10,000 for a period of five minutes. It is stated, in a paper [3] describing this tunnel, that experiments made on city streets showed a concentration in the open street up to 1·7 parts per 10,000 on still days.

The poisonous nature of the gases which collect in closed garages is now well known, and a number of people have lost their lives through remaining in closed garages with their car engines running. Experiments have been made in Washington at a large Government garage which showed that there was an average concentration of CO of 1 part per 10,000, rising sometimes to 8·9 parts. At another garage the average for a day was 1·64 parts per 10,000, and for an hour 4·33.[4]

COMPOSITION OF EXHAUST GASES

In motor vehicles the fuel burnt is petrol or benzol, and these are composed practically entirely of carbon and hydrogen, with a negligible percentage of sulphur amounting to about 0·02 per cent. for petrol and 0·3 per cent. for benzol. Neglecting the sulphur, either petrol or benzol should burn to carbon dioxide and water, but in fact it is found that is not the case, and perfect combustion only occurs when the conditions are exactly right and the air-supply just correct in quantity. For example, with a little over 15 lb. of air supplied per lb. of petrol, the exhaust gases should contain nothing but CO_2, water, and nitrogen, but if the air-supply is reduced it is found that the percentage of carbon monoxide rises very rapidly.

Table showing Composition of Exhaust Gases
(A. W. Judge [5])

Ratio of air to petrol by weight.	Per cent. composition.						Percentage of heat of fuel used.
	CO_2	O	CO	H	CH_4	N	
9	6·7	0	12	4·3	1·4	75·6	58
10	8·2	0	9·6	3·5	1·2	77·5	61
11	9·6	0	7·3	2·6	0·9	79·6	71
12	11·1	0	5·0	1·8	0·6	81·5	79
13	12·5	0	2·6	0·9	0·3	82·7	89
14	13·5	0·4	0·4	0·1	0	85·6	99

The accompanying Table shows the way in which the exhaust gases vary in composition as the air supply is varied.

We may take it that there is usually about 5 per misapprehension for which the doctor was in no way responsible, the information given was not the information required. The court therefore made a further adjournment in order that the doctor might give additional information whereby the credibility of a witness in the case might be tested.

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* Based on a paper read at the Public Health Congress and Exhibition in London, November, 1932.

[1] Noxious Gases. New York, 1927, p. 110.

[2] Engineering News Record, 1925, xciv., 764.

[3] Engineering News Record, 1928, ci., 942.

[4] Indust. and Eng. Chem., 1928, xx., 31.

[5] The Testing of High Speed Internal Combustion Engines. London, 1924.

Medical practitioners in charge of clinics may have occasion to emphasise the assurance of professional secrecy in order to persuade patients to present themselves for treatment with confidence, and to continue the treatment for the necessary period. In these circumstances, the practitioner will naturally deprecate and resent being placed in the witness-box and asked to disclose the facts of treatment. It looks like a breach of faith towards the patients in general, many of whom may know that he has given such evidence, but may not know that he gave it at the express request of a patient. Legally, the Burslem magistrate's view was undoubtedly correct. The privilege of secrecy belongs to the patient; the patient can waive it. The Burslem case differed only in degree from the ordinary occasions when a patient asks his medical attendant to give evidence of his injuries in support of a claim for workmen's compensation or for damages against a negligent motorist. Patients would be at a serious disadvantage if they could not claim this aid. The privilege of professional secrecy between solicitor and client is far more firmly established than that between doctor and patient. A solicitor is never compelled by a court to disclose his client's confidences. Yet he often goes into the witness-box to state facts in his client's favour.

Inquest on Christian Scientist

A recent inquest on a Christian Scientist at West Norwood was on familiar lines. Medical evidence showed that the patient had advanced heart disease of long standing and was almost gasping for breath; she would still be alive if a doctor had been called in in good time. A Christian Science practitioner explained his method of treatment, and was asked the usual question as to how he would treat a broken leg. He said he had practised for 20 years; he took fees, and he professed to cure all ailments. The husband of the deceased explained her objection to the calling in of a medical practitioner. The jury added a strong rider condemning the denial of the benefit of modern medical science.

These cases have little medico-legal interest. Parliament has recognised Christian Science treatment by saving words in the Nursing Homes Registration Act; it is impossible therefore to suggest that the treatment and its consequences are illegal. The law stops far short of applying the principles relating to "suicide pacts" to cases where husband and wife agree to follow the rules of Christian Science.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

PSYCHIATRY IN EDINBURGH

Dr. D. K. Henderson, who succeeds Prof. George Robertson in the chair of psychiatry as well as at the Royal Mental Hospital, gave his inaugural address on Jan. 12th. The chair owes its establishment largely to the late Sir Thomas Clouston and the late Prof. Robertson, who made psychiatry a reality in the University and in the Jordanburn Clinical Laboratory. Edinburgh is now peculiarly well-equipped over the whole field of mental diseases and mental deficiency. The superintendent of Bangour Mental Hospital, which is now under the municipality, is also the superintendent of Gogarburn institution, which has been designed for the early medical and hospital treatment of the insanities as well as for the care of the feeble-minded. He is, further, head of the service for the management of mental defectives in the special schools of the city, under the medical officer of health.

Prof. Henderson thus comes to the University, or rather back to it, to find a well-organised system for dealing with mental disorders in all their phases. In his lecture he showed a comprehensive grasp both of concrete detail and of broad principles, and also a sympathy with all varieties of treatment when kept in their proper place and perspective. One had to remember, he said, the many popular lines of interest for those "who faltered by the wayside and who still found their satisfaction and help in simpler beliefs." The influence of the mind in therapeutics was as powerful to-day as in the past centuries. The work of the psychiatrist concerned itself with the primal instinctive, impulsive, emotional needs of our being, with the instinct of flight and the emotion of fear and rage, with repulsion and disgust, with interest and wonder, with self-abasement, and self-assertion, with instinct of reproduction, the herd instinct, and with everything that determined the type of people we were. "That was too big an affair to be left to chance and the pious hope that everything would work out for the best in this best of all possible worlds."

"Here, in the present," he said, "we must build a psychiatric organisation, so that persons suffering from nervous and mental illness might obtain skilled help at a time when they were susceptible of betterment. The enthusiasm and initiative of his predecessor, Prof. Robertson, provided such an organisation for Edinburgh, and it would be his endeavour to keep the machinery in good working order."

THE ROWETT INSTITUTE

Through the generosity of Lord Strathcona and other friends, the Rowett Institute, at Aberdeen, has been presented with "Strathcona House," for the accommodation of research workers, who from time to time come from all parts of the Empire. The new hostel contains a large dining hall panelled in oak, a common-room in oak, and 15 bed-sitting rooms, in addition to kitchen and other essentials. Lord Strathcona presided at an inaugural dinner. The meeting included representatives from leading Government departments, research institutes, and, generally, from those concerned in the problems of animal and human nutrition. Sir Godfrey Collins, Secretary of State for Scotland, said that the influence of the institute had reached to all parts of the British Commonwealth. Sir William Hardy, F.R.S., Mr. F. L. McDougall, Sir Walter Fletcher, F.R.S., and Major Walter Elliot, Minister of Agriculture, also took part. The director of the institute is Dr. John Orr, F.R.S.

PARIS

(FROM OUR OWN CORRESPONDENT)

MORE DISCIPLINE WITHIN THE MEDICAL PROFESSION

It is more or less a coincidence that both France and Belgium are at present trying to put their houses in order in the matter of medical discipline. Neither country has hitherto enjoyed the alleged benefits conferred on the doctors in England by the General Medical Council. Of course there has all the time been opinion of the Director of Lunacy, is that the Khanka Mental Hospital has been so divided that one portion forms a criminal asylum for men, and one for ordinary cases of lunacy, a decision being made at the mental hospital of Abbâssîya as to the mental state of criminals. To find room for all these cases at Khanka must be difficult, but in the following paragraph of the report we find that "it was decided to admit drug addicts on their own personal request, even to the extent of overcrowding the hospitals," and that "Khanka should take all the non-paying cases." This we think to be a far more outstanding event. It was emphasised in the report for 1930 that the mental hospitals were, already overcrowded to the extent of 344 patients, on an average, beyond the number of beds existing; while 1113 patients had been discharged still insane during that year owing to lack of room It was further stated in that report that this discharge of the insane was "a very disturbing proposition." The disturbance must be aggravated if a decision is taken in the following year to admit a large number of persons not certified to be insane, but merely the subjects of vicious habits. Cases of real insanity from drugs continued, of course, to be certified and properly admitted, to the number of 52; but nearly 500 persons of vicious drug habits were admitted, while, consequently, an equivalent number of insane persons must have been denied the treatment which they would otherwise have had, and for which the hospitals were instituted.

No information is given as to the nature of the drugs used by these addicts, whether it was hasheesh, cocaine, morphia, heroin, or some combination of them. But the nature of the procedure will be better realised if we can imagine 20,000 habitual drunkards being admitted as voluntary patients into the already full county and borough mental hospitals of England in a year, and an equal number of insane patients discharged to make room for them. The admission of these addicts to the necessary exclusion of the insane who require hospital treatment is a retrograde measure, and appears also to be a fiasco, for the report states: "It is regretted that the experiment in so far as curing addiction is concerned is a failure, the effects of over-indulgence in drugs can be cured easily, but the cause of the addiction remains uncured, except in the extremely small class of accidental addiction. Drug addiction depends on the moral sense and strength of will of the individual, and cannot be improved in a few months, much less in the time taken to cure the ill-effects of the overdosing. It is feared that the only radical cure for addiction is to improve the moral sense of the individual. In the meantime, the only hope is to make access to drugs very difficult, and their possession as unpleasant as possible." It would be of interest to know where the responsibility lies for the decision to admit drug addicts into the mental hospitals, for the lunacy authorities could hardly have welcomed the proposal. The admission of these addicts into the ordinary hospitals of the Public Health Department, or into special isolation camps would have been reasonable, or into prison infirmaries, when the individuals could have been charged with trafficking in prohibited drugs; but why send them to institutions already notoriously crowded, and intended for quite a different class of cases?

A study of the figures suggests that the intermingling of drug addicts with the insane has produced confusion in the figures recorded, as indeed it may well have done in the hospitals themselves. Thus the 492 addicts appear in some tables but, quite unaccountably, not in others—e.g., they swell the admission figure in Table I. to an unprecedented height (2225), and the number of recoveries has risen from 119 in 1930 to 490 in 1931. This reckoning of addict discharges as recoveries renders the figures shown valueless as an indication of the recovery rate among the Egyptian insane. In Table V. the inclusion of the addicts increases by 492 the figure credited to one of the causes of insanity in that table—viz., drugs. This table already (and rightly) included 52 cases of real insanity due to drugs. Yet in Table III. (Forms of Insanity) and Table IV. (Distribution of Admissions in the Country) the 492 addicts do not figure, being now apparently considered not to be suffering from insanity. This apparently arbitrary use of the figures relating to addicts wants explanation. If they appear in one table why not in all? In Table III., which professes to show the form of insanity of each person admitted, the total number of persons is given as 1556—i.e., the 2048 persons mentioned in Table I. less the 492 addicts; but, according to Table I., 80 or nearly 80 of these 1556 persons were not insane, and should have been so entered in Table III., while only the balance of 1476 persons should figure in Table III. under the ten forms of insanity mentioned in it. These 80 sane persons also figure in Table V., and the causes of their insanity (or sanity?) are professed to be given; perhaps chiefly among the 77 cases of unknown causation. These 80 sane persons also appear inappropriately in Table IV. Of course, they should not have appeared in any of these three tables.

It would have been wiser to have kept the statistics as to drug addicts completely separate from those relating to the ordinary insane. But, in view of the failure of the experiment in their admission to the mental hospitals, it is to be hoped that the procedure will be discontinued. The local lunacy authorities could make strong representations on the subject, and in so doing could rest assured that their fellow-workers in British mental hospitals would sympathise with their efforts to change an unfortunate policy.

The reduction of the report to its present size renders it difficult to form an adequate picture of the progress of lunacy work in Egypt, a matter of real regret. It is to be hoped that the lunacy authorities in Egypt will persuade the Government to remove any restraint that may have been exercised out of misplaced economy.

MEDICINE AND THE LAW

Patient Waives Professional Secrecy

THE stipendiary magistrate on Jan. 10th resumed the hearing at Burslem of the affiliation proceedings in which a doctor declined to give evidence at the request of a patient. The defendant denied paternity, said the girl's story was untrue, and called the doctor (who had treated him at a clinic under the Stoke-on-Trent public health department) in support of his statement. The doctor based his refusal on grounds of public policy. The magistrate, in adjourning the case in order to give the doctor a chance of considering the position, pointed out that the privilege of secrecy was not vested in the doctor but in the patient. A patient who wished his doctor to disclose something was entitled to have the benefit of the doctor's evidence. On resumption of the proceedings, the magistrate said the doctor had now supplied certain information in writing. It happened that, by a e was always ready and willing to give treatment nd to issue certificates when asked by a patient o do so. The insurance committee's representative ought to argue that Dr. Z had failed to comply with he terms of service even though he had not committed breach of the terms. The report on the appeal ejects this subtle distinction. It agrees with Dr. Z hat his obligation to give treatment does not begin ill the patient asks for it; it holds that there has een no breach of the terms of service. The report, however, does not overlook the omission to give certificates in the prescribed form. It observes that it seems to have been suggested that it did not matter whether the certificates tendered by insured persons to an approved society were in the proper form or not, or whether they did or did not contain the required information. It recalls the fact that the forms are the outcome of consultation and agreement and that they have been accepted by insurance practitioners generally, from 1914 onwards, as conveying information which it is important for the societies to have and not unreasonable for panel doctors to give. Although societies do in fact accept certificates not on official forms, the report regards the arrangement at this hospital as placing the insured persons on Dr. Z's list in an unfortunate position. Such an arrangement, "though not necessarily inconsistent with the requirements of the terms of service, obviously does not conform to that spirit of reasonable coöperation between insurance practitioners and approved societies which we are glad to think generally prevails." The Minister has allowed Dr. Z's appeal; he directs that no order be made as to costs.

A Compassionate Arrangement

The Minister has allowed another practitioner's appeal in a case turning upon the extent to which a panel doctor may delegate work to an assistant. A doctor carrying on panel practice in south-east London died in 1928 leaving several young children. The two eldest were studying medicine but, not being yet qualified, were not available to succeed to their father's practice. By a compassionate arrangement designed to bridge the interval which must elapse before the children became qualified, an elderly practitioner, a friend of the family, undertook the practice himself. He changed his surname by deed poll to that of the deceased; he joined the London panel list, and put up his plate at the deceased's surgery. In 1929 he asked the London insurance committee's permission to employ an assistant. Leave was granted for 12 months on the applicant's assurance that he meant to attend the surgery daily himself, mornings and evenings. In 1930 the decision was reviewed. It was found that the assistant had signed every prescription for an insured person during the previous year. There was a question of the panel practitioner's fitness, but the panel committee declared him to be mentally and physically fit for his work in spite of his 80 years. From this point he did sign some of the panel prescriptions, but the large majority were still signed by the assistant. In 1932 the insurance committee took up afresh the question of withdrawing consent to the assistant's employment. The panel committee was of opinion that the practice and the insured person's interests had not suffered and that it would be unreasonable to withhold consent; the assistant did not want to become a partner; if he could not be employed the practice would suffer because a fresh practitioner would have to be brought in. The insurance committee nevertheless withdrew consent and the panel doctor thereupon appealed to the Minister. Among the witnesses at the hearing was Dr. Batteson, chairman of the London panel. He thought this was not a case of farming-out; there were no branch surgeries; one doctor was not exploiting another, and there was no prejudice to the interests of other practitioners; the appellant seemed to exercise a reasonable supervision. The persons appointed by the Minister to hear the appeal accepted and confirmed this evidence. There was proper continuity of treatment and there was no failure to comply with requests for personal attendance. If the insurance committee had refused permission after experience of the first 12 months of the arrangement, their decision could hardly have been held unreasonable. But now the position was admittedly better; the practice was satisfactorily conducted; the appellant himself was apparently taking a slightly more active part; and the deceased doctor's two children were on the point of being qualified. It was true that the insurance system must be embarrassed if all the treatment is given by a practitioner who is not the person in direct contractual relation with the insurance committee and responsible for mistakes which occur. But it was not possible to define exactly the extent to which a principal must personally participate in a practice. The Minister allowed the appeal but made no order as to costs. In this and the previous successful appeal, the London and Counties Medical Protection Society conducted the appellant's case.

Publicity and Prejudice

Cases have occurred in various parts of the country in which, either through local gossip or publicity of the facts locally in a sparsely medically populated area, it has been easy to indentify the doctor if not the complainant (through the veneer of Dr. A or Mrs. R) in the report of a medical service subcommittee to the insurance committee. The same applies to the parties to a pharmaceutical service case. The members of the main committee, on the other hand, do not know the names of the individuals concerned when they discuss the report and its suggested recommendations. An insurance committee has no power to alter the findings of fact set out in these service reports, but it can amend the recommendations based on the findings, alter a caution to a censure, increase the sum of money suggested to be withheld, or decide to ask the Ministry to hold an inquiry as to whether the continuance of Dr. A on the panel is prejudicial to the efficiency of the service. The insurance committee thus has serious powers over and above those of its statutory subcommittee, and it is on this account the more important that its members should read the reports and agenda papers with an open mind before coming to a decision. And herein lies the difficulty, for agenda papers of the insurance committee may be circulated to the press before they reach the Ministry of Health, and it has happened on more than one occasion that some paragraph prejudicial to one of the parties concerned in the case—probably the doctor—has appeared in a local paper of an area in which the doctor is well known and recognisable by the facts stated.

In such conditions it is not likely that justice will be done, and the Ministry of Health, after consulting with the Insurance Acts Committee, has circulated a letter to insurance committees in which the opinion is expressed that no publicity should be given to any report of a service subcommittee before the

the law of the land from the impartial constraint of which the medical profession has enjoyed no special immunity. For example, the French doctor who omits to take the necessary measures in a case of notifiable disease, and whose omission has certain deplorable consequences, may find himself suffering certain legal penalties. If his excursions in the operative field lead to disaster for the patient, they may ultimately lead to disaster for the surgeon himself in the law courts. But for a long time there has been a growing feeling in both countries that the sins of omission and commission in the practice of medicine are so specialised that none but doctors themselves possess the necessary knowledge for dealing with them. We set a thief to catch a thief, and the ex-poacher is the best gamekeeper; though far be it from me to suggest that the knowledge your General Medical Council brings to bear on disciplinary cases has been acquired by any personal experience. In Belgium there has been some opposition on the part of the medical profession to the principle of a medical court or council. But when, last December, a Bill embodying this principle was put before the French Chamber of Deputies, it was passed without discussion. This Bill provides for a Medical Corporation or Order, which, though in a sense autonomous, is to be a State-sanctioned body. In every department there is to be a separate Order, each with its own president and council. Every doctor who is not in the army, navy, or air force must join one of these Orders, and he cannot belong to more than one. Presumably there will be some sort of central body coördinating the activities of all the Departmental Orders. Their functions are to be manifold, from administering benevolent funds to investigating and dealing with cases of alleged infamous conduct in a professional respect. The French legal profession has already had a considerable experience of the disciplinary workings of a similar body, the constitution of which has, to a certain extent, been a model for the framing of the new medical Order.

PYREXIAL THERAPY IN EXPERIMENTAL SYPHILIS

C. Richet and J. Dublineau have reported to the Academy of Medicine on some experiments with syphilitic rabbits submitted to a high temperature alone or in conjunction with some chemotherapeutic drug. By artificially raising the temperature of a rabbit for 22 minutes to 41·4° C., or for 15 to 17 minutes to 42·4° C., they succeeded in curing the syphilis in three cases, while they failed in two other cases. They ascertained whether a given rabbit was cured or not by injecting some of its tissues into a series of healthy rabbits and noting the results. In four cases the temperature of syphilitic rabbits was artificially raised at the same time that an infra-curative dose of arsenic was given. In every case the syphilis was cured. Investigations in vitro also showed that a temperature of 41° C. maintained for 30 minutes or longer robbed the treponema of all its virulence, though limited movements might continue two hours longer. It should be noted that Levaditi and many others have also contributed to the study of thermotherapy in experimental syphilis.

TREATMENT OF CANCER OF THE CERVIX

At a recent meeting of the Société Nationale de Chirurgie, Prof. Jean-Louis Faure weighed the claims of operative treatment against those of radium treatment in cancer of the cervix, and cited statistics in favour of the former. Among the last 200 cases of cancer of the cervix observed in his hospital, there were 171 pavement-celled cancers and 29 cylindrical-celled cancers—i.e., 14·5 per cent. of the latter. Now, according to Prof. Regaud, this latter class is radium-resistant. If his opinion is correct—and it is not unequivocally confirmed by the observations of Gosset and Wallon—then some 15 per cent. of all cases must be considered as hopeless if operative interference is abandoned. Another objection to radium treatment is its immediate mortality which, according to various statistics, ranges from 2 to 7 per cent. As for the late effects of radium treatment, the recent researches of Proust, published last October, are most disquieting. In 1926 he was able to show that 40 per cent. of his patients treated by radium could be considered as cured after an observation period of one to four years. But in 1932 only 10 per cent. still survived. The actual number of patients treated in the period 1922–1925, inclusive, was 236, and the survivors in 1932 numbered only 24. Prof. Faure remarked incidentally that in judging of the durability of the results achieved by the two methods of treatment, a longer observation period must be required of radium than of operative treatment. The patient who has been operated on and has remained symptom-free for two years, has nine chances out of ten of being permanently cured. But it may be necessary to wait five or even ten years before the permanency of a radium cure can be claimed. For the inoperable case radium may be admirable, but for the operable case it is, in his opinion, inferior to operative treatment.

PANEL AND CONTRACT PRACTICE

Treatment of Hospital Staffs

A RECENT appeal concerned the arrangements for medical treatment of hospital staffs. It has been customary in a certain hospital in London for the senior assistant medical officer to attend to the medical requirements of the staff. Dr. A, who held this appointment, refused from the beginning to undertake national health insurance work, mainly, it seems, because of his conscientious objection to issue certificates disclosing particulars of his patients' ailments. In 1913 Dr. Z, the medical superintendent of the hospital, joined the medical list; a large number of the insured members of the staff placed themselves on Dr. Z's list; the capitation fees which Dr. Z receives he places to a fund for the benefit of the staff. The insured members do not usually apply to Dr. Z for treatment; they are treated by Dr. A. In fact Dr. A does Dr. Z's work, but Dr. Z makes no personal profit from the arrangement. Dr. A, however, declines to issue certificates in the prescribed form required by approved societies; his certificates merely state that the insured person is "off duty owing to ill-health." This economy of information seems to have caused remarkably little administrative difficulty; the absence of the proper certificate has not prevented the insured persons from obtaining sickness benefit. But in one specific case an approved society complained to the Ministry that they "tried to obtain a proper certificate but the doctor who signs it objects to giving any other." The London insurance committee decided that Dr. Z had failed to comply with the terms of service. On appeal he argued that his duties under the medical benefit regulations do not arise until patients apply for treatment; he declared that complication, or to some temporary upset, such as indigestion.

I am fortunate in having beds of my own to look after, but as it happens these are nearly all semi- or greatly-advanced cases, some of which are received into the tuberculosis wards of our infectious diseases hospital within the borough, but others are housed in the municipal hospital already referred to. Emergency cases, such as that of a domestic servant with hæmoptysis, whose mistress desires her speedy removal to an institution, are taken into whichever hospital has a vacancy. Early cases we send away to sanatoria in various parts of the country, and cases of surgical tuberculosis in children and adults we send away to those hospitals specially dealing with such cases.

THE DISPENSARY

My dispensary is centrally placed and is readily accessible from all parts of the town. There are five clinics weekly, on three afternoons and two evenings, and every effort is made to enable the place to act as it is rightly intended to do under the tuberculosis scheme—namely, as a place for consultation and sorting out of cases—a clearing-house, in fact—not as an out-patient department for the perfunctory distribution of cod-liver oil and malt. I do not say that we do not give medicines to uninsured persons, but this is discouraged, patients being referred to their own medical attendant whenever possible.

After lunch I start at 2 P.M., the premises having been opened and gas-fires lit (in winter) by the dispensary nurse. Nearly all the cases come with a doctor's card or letter, which means a letter back to the sender with an expression of opinion and suggestions as to treatment, &c. The patient is first interviewed singly by the nurse who acts as a clerk, the necessary details being entered by her upon the blank dossier. She next weighs the patient, directs him or her into a dressing-room, and, if a female, comes into my consulting-room with her. The first patient to-day is a thin, under-nourished little girl of 7, recommended by one of the school medical officers. She is stated by her mother to have had a cough on and off for about two years, usually worse in the winter. The tonsils and adenoids had been removed a year ago. She had no temperature and there was no family history of tuberculosis. On examination there was nothing definite to be heard, and I could not even say that d'Espine's sign was positive. There were no visible or palpable glands. She may, of course, have an enlarged mediastinal gland which is pressing on the trachea, giving rise to the cough, but this can only be determined by an X-ray examination, which I propose to do. The next is a boy of 9, with a tag of exuberant granulations at the end of a scar on the side of his neck. The history was that a swollen gland had appeared in that region during the summer holidays, had burst, apparently without medical attention, and had left the usual ugly, broken-down, partially healed scar. He was referred to his own doctor.

The next is a problem, a tuberculous mother, with three small children, and a drunken husband who has also been mental—truly a case for the eugenists to shout over! At various times the family has been assisted by every humanitarian agency, both official and non-official, in the town with only temporary benefit. She has been sputum-positive and the whole family has been examined as contacts with negative result. One child, the eldest, was sent away by one agency to a boarding-school near London, but the father demanded her return; another was got into a children's home in the town, but the third refuses to leave his mother, and the parents continue to lead a cat-and-dog sort of existence—a pitiable state of affairs in which law and medicine seem able to do little. The next is a young woman in whom thoracoplasty has been performed for empyema, six years ago, with a very good result. She has been able to do a certain amount of domestic work in her mother's house, though there are still a few crepitations at the upper part of the affected lung. She looks very well, and is certainly a marvel considering what she has been through.

Here is a thin man, a war-pensioner, who had a four-figure position before the war. He has a slight cough, very scanty sputum which has been positive, but suffers from great fatigue on the slightest exertion. He is in a fairly comfortable position in life, living with relatives, and can take as much rest as is demanded, so he is really well off and does not need institutional treatment. Rather different is the case of this young man of 20, also thin and weedy, with a cough, night-sweats, and slight sputum of about two months' duration. He does not consider himself ill at all, nor does his father, but I had to tell the latter that there were early signs of disease at one apex, and that if this were allowed to go on without treatment matters would only get worse. His doctor and I agreed that sanatorium treatment was strongly indicated, and arrangements were made to get him away as soon as possible.

The next case, a woman of 19, the daughter of a tuberculous mother, whom she helped to nurse, revealed the sad fact that she herself had become a victim of the disease, but she was a home-loving girl and she did not wish to leave her mother. Besides, she had a good bedroom to herself and there was no evidence of privation. On examination I found a few crepitations at the right apex and the sputum was positive. There was slight evening pyrexia and also loss of weight. Her doctor, to whom I wrote about her condition, agreed with me that the only practical thing to do was to induce an artificial pneumothorax upon the affected side, provided that the other lung was good. I screened her a few days later and took a film, and as the left lung appeared to be healthy I took her into the hospital and induced an artificial pneumothorax with success. Several old cases followed, and after the clinic was over I went to the laboratory at our infectious diseases hospital, where I examine all the sputa of my own patients as well as specimens sent up by practitioners in the town, and stained several films.

CONTACT EXAMINATIONS

It may be urged that I have said nothing yet about the preventive aspect of my work, for surely that is equally, if not more, important than the treatment of those already affected. Well, suffice it to say that our staff of health visitors, my dispensary nurse, and myself do all in our power, by visitation and persuasion, to get contacts medically examined, either in their own homes or at the dispensary. In many cases the request is acceded to quite readily, but in others it seems that no amount of talking, even of the right kind, will induce some to be examined who undoubtedly should be. They plead all manner of excuses and some are most elusive, so that the ideal "march past" of possible and actual contacts, originally a regular slogan of the early days of the tuberculosis campaign, becomes a downright hunt, and even then the prey will not be tracked down. In all open cases it is imperative to get hold of young children whose susceptibility to "mass infection" is great. It is in cases of this kind that an after-care committee can be of great service, and I am fortunate in having one in this town, to which I am the honorary medical adviser. We are often successful in getting children from tuberculous households sent away to convalescent homes, or to be boarded out with some kind motherly person in the country. With some persons of an obstinate nature it is little use to adopt a bullying or a frightening attitude. It may take longer, but one is often more likely to win a case over for examination by a plainly reasoned statement about the manner in which infection is conveyed and avoided. To assist further in this direction we make free use of leaflets giving simple talks about consumption, what to do when one has got it, and how to prevent giving it to others as well as how to prevent people from becoming infected. It is found that personal talks in the home and at the dispensary, by the health decision of the insurance committee on this report has been taken. The matter was discussed at some length by the general purposes subcommittee of the London insurance committee after obtaining the opinion of both its service subcommittees. The medical service subcommittee thought the view of the Ministry was right; the pharmaceutical service subcommittee thought it was wrong. The former would like its reports issued as a separate document to members of the insurance committee, but not to the press. The latter said it was an established custom amongst local authorities to send the agenda paper of any of their meetings to the press at the same time as it was circulated to members, and was unaware of any reason for withholding from the press such information as was contained in its reports.

It seems that in Lancashire the press are requested to refrain from publishing or commenting upon any matters contained in the reports of the service subcommittees until confirmed or altered by the insurance committee. This was the first course advised at the meeting of the London general purposes subcommittee. After discussion, however, a majority of the subcommittee thought there should, in London, be no alterations of the present procedure, as it would be contrary to the public interest for the press not to be furnished with agenda papers at the same time as to the committee. A resolution to follow Lancashire's example was withdrawn, and at its next meeting the subcommittee decided to take no action on the suggestion that reports of the service subcommittee should not be issued to the press till after such reports had been considered by main committee and decision taken thereon. This resolution when it reached the insurance committee was carried without discussion.

The Ministry of Health may make the suggested alteration obligatory on insurance committees. Their letter hints at this, although it does not say so. It is obviously impossible to have one set of rules for the trial of an insurance doctor acting in one area and another set of rules in another area.

THE DOCTOR'S DAY

"Come, tell me how you live," I cried,
"And what it is you do!"

XI.—TUBERCULOSIS OFFICER

I DO nothing else but tuberculosis, day in day out, being a purely "specialist" officer attached to the health department of a large county borough, and I am clinically absolutely "on my own." When one has been in the tuberculosis service for nearly 20 years and is known to do nothing else, it is natural that one's colleagues in general practice in the town should refer their suspect and actual cases of tuberculosis to him who, by virtue of training, experience, and qualifications, may justly lay claim to the title of specialist in this disease. I am happy in the thought that my relations with all the doctors here are most cordial. It might be thought that such work must be unsatisfying and monotonous, but, indeed, it is actually far from being so. True, I sometimes feel that I am fighting against odds, but a pessimist should never become a tuberculosis officer, for even with modern weapons of warfare consumption still remains, if not the "captain," at least the "lieutenant" of the "men of death." I am far more sorry for my nurses in my tuberculosis wards, who are daily and hourly in close contact with more or less advanced cases of the disease—and who are bigger grumblers than consumptives?—than for myself.

ROUTINE

Here is an example of a day's routine work. On this particular morning I have my artificial pneumothorax clinic at the municipal hospital, which is some miles outside the borough boundary. I drive out by car, and the patients get there by bus or by train. At 10 A.M. screening begins, and the first case comes in. He is a man of 26, whose artificial pneumothorax was induced at one of the London hospitals, but he has recently come to live in this town, so I have to carry on with his refills. He has a fairly good right-sided collapse, the left showing merely the usual slight congestive hyperæmia; heart in good position. He subsequently took 300 c.cm. of air, and was left with a final pressure of 2 ±0. The next was a girl of 19, whose artificial pneumothorax was of a years' duration. She had recently had a chill, some pain in the side, and had had a temperature of 100° F. On the screen the right chest was seen to contain fluid giving the characteristic wave-like movement on shaking the body, but not a very large quantity. She was told to go home and rest and return in a week for rescreening. Subsequently the fluid increased so that I had to replace it with air, and her progress was good. It is strange how well many of these artificial pneumothorax cases do after having had an effusion, provided of course that it is not purulent. The next was the case of a man of 50, tall, asthmatic, with a tendency to stoop, and a worried look. I should not have been surprised if I had found radiographic evidences of tuberculosis, but the screening showed nothing definite. A film revealed some slight mottling at the left mid-zone, but his sputum has been negative on several occasions. Here is a youth of 19 with a bad family history, his father and one brother having had the disease. He had felt "run down"—an ominous expression which I never like to hear—for some few months past, and owned to have smoked about 20 cigarettes a day. Physical examination showed nothing definite, but I thought it imperative to X ray him, as it not infrequently happens that a film will reveal something suggestive of an early lesion when one can hear practically nothing with the stethoscope. However, the film showed nothing upon which I should have been justified in labelling him as tuberculous. Nevertheless, his doctor and myself will both watch him, and if necessary I shall rescreen him and take another film. This young lady looks the picture of health, is symptom-free, though 12 months ago she was sputum-positive. She went away to a sanatorium where an artificial pneumothorax was induced, and now she has a good uniform collapse, free from adhesions, which are the twin bugbear with fluid of all artificial pneumothorax work, and I gave her a (three-weekly interval) refill of 350 c.cm. Take it on the whole it is perfectly true, as one of my colleagues once wrote in *Tubercle*, that an artificial pneumothorax out-patient clinic is mostly a happy crowd, because each patient feels that the special treatment is really getting to grips with the disease, and also because, in the favourable cases, the sufferers are feeling well and are at work. One of my boys is a butcher in full work, another a labourer also (luckily) in permanent work. It is always sad when, as occasionally happens, one has to abandon the treatment owing to adhesions, or to the spread of disease in the opposite lung. Still it is agreed that artificial pneumothorax is the brightest spot in our modern therapy, and, personally, I enjoy this part of my work more than any other.

The screening over, the refills are given, men first and women afterwards, and in the work I am most ably assisted by one of the assistant medical officers of the hospital who is capable of acting for me in my absence. In practically all cases the patients are able to return home immediately after a refill. Only exceptionally is a little rest needed, and then it is generally owing to some threatened or actual

CORRESPONDENCE

MASKED HYPERTHYROIDISM

To the Editor of THE LANCET

SIR,—Dr. John Towers, in his paper (p. 67), and you, in a leading article (p. 91), have called attention to an important aspect of hyperthyroidism as a cause of heart disease. I believe that I was one of the earlier writers in this country to describe this particular aspect of thyroid disorder, and in a paper[1] recording two cases I referred to the article (quoted by Dr. Towers) by S. A. Levine and C. C. Sturgess, a reprint of which reached me soon after these cases had been under my care. In one of my cases the patient complained of the heat of the ward (in winter), and I have subsequently found the preference of such people for cold weather a useful indication of raised metabolism. I venture to quote the concluding paragraph of my article as evidence of my agreement with Dr. Towers's observations :

> "This type of hyperthyroidism is a subtle one, a most important one, and one the true nature of which is often overlooked. Suspect hyperthyroidism in all cases of fibrillation, tachycardia, and other cardiovascular disorders for which no other cause can be found and which do not respond to the usual remedies, and be fairly convinced of the accuracy of your diagnosis if only one or two of the many symptoms of hyperthyroidism are present."

I am, Sir, yours faithfully,
Norwich, Jan. 14th, 1933. H. J. STARLING.

DERMATITIS FROM DYED FABRICS

To the Editor of THE LANCET

SIR,—The valuable paper by Dr. E. M. Killick and Dr. J. T. Ingram in your issue of Jan. 14th (p. 77) calls for some comment, because it may tend to confuse the issue as between chemical and personal tests. The authors, as it seems to me, go beyond their brief, and would have one or the other as a causa causans of dermatitis resulting from the wearing of dyed garments. Personally, I have always employed both chemical tests on the garment and specific tests on the individual for idiosyncrasy. I am therefore well aware that idiosyncrasy plays an important part. The point, however, is this : There are certain methods of dyeing in which soluble oxidation products—e.g., of para- or meta-phenylenediamine are produced which are capable of giving rise to dermatitis in healthy controls. These can be withdrawn from fur—and I assume from other garments also—by prolonged washing. This is an expensive process and has frequently been omitted in the case of furs which have given rise to dermatitis. I have produced dermatitis by patch and scarification tests with these substances not only with the incriminated fur, but with the chemicals prepared in vitro. I have never, however, attempted to deny, nor so far as I can ascertain has anyone else, that idiosyncrasy to fabrics dyed with phenylenediamine or any other chemical does not occur. In many of my own cases I found such idiosyncrasy, and therefore absolved the fur.

The point is of something more than academic value. The fur trade is to be congratulated on having solved the problem of providing for persons of limited means garments which keep them warm and give them a pride in their personal appearance : and for this purpose para-phenylenediamine and its allies are customarily employed. The soluble intermediate oxidation products, however, are harmful and capable of causing dermatitis in subjects from whom idiosyncrasy is absent and failure to eliminate these has been judged in many legal causes to be evidence of negligence, and damages, often large, have been awarded because fur dermatitis may last for months or even years and reduce the sufferer to a wreck from constant irritation and sleeplessness.

To sum up. There are two causes for "fabric" dermatitis—namely chemicals which give rise to irritation of the skin in healthy controls, and which should have been removed from the fabric, and sensitisation which is attributable to the person and not the garment. The distinction is not difficult, for appropriate and reliable tests are available for the purpose. Whether the garment is made of fur or other fabric does not seem to matter very much.

I am, Sir, yours faithfully,
A. KNYVETT GORDON, M.B.
Bedford-square, W.C., Jan. 16th, 1933.

PROGRESSIVE POST-OPERATIVE GANGRENE OF THE SKIN

To the Editor of THE LANCET

SIR,—It was most interesting to read Mr. F. Hector Scotson's report of a case in your last issue, as the condition is more common than references to the literature would lead one to suppose. The reasons are doubtless due to the obscurity of the cause and the lack of success from treatment.

In my experience gangrene of the skin may follow an operation, usually for appendicitis, or it may occur spontaneously, and then most frequently in the genito-crural region. The appendix is most often a gangrenous one in the process of which the *Bacillus morgan*, a derivative of the *B. proteus vulgaris*, plays a rôle. A case of the spontaneous form, unique, because of the multiplicity of the lesions, was described in *The Nature of Disease Journal* (p. 120). The cause appears to be the *Bacillus gangrenæ cutis*, a name, which I believe was first given by Milian in Paris to the bacillus held to be responsible for the spontaneously occurring genito-crural form. Balog published one of these genital cases in 1931. The *B. gangrenæ cutis* belongs to the proteus group of micro-organisms, and has most probably had origin with Ducrey's bacillus from the *B. morgan*. There is a close similarity between the gangrenous lesion and ulcus molle serpiginosum, of which I published the first description in this country in 1914. The most successful treatment for gangrene of the skin is novarsenobenzene, injected intravenously. The drug is almost a specific and does away with all need for the cautery. The drug best suited for ulcus molle serpiginosum is tartar emetic injected intravenously.

I am, Sir, yours faithfully,
J. E. R. McDONAGH.
Wimpole-street, W., Jan. 13th, 1933.

DOSAGE OF INSULIN

To the Editor of THE LANCET

SIR,—May I, as another "diabetic doctor" on insulin for ten years, present a more fortunate experience of the successful standardisation of British insulin than is expressed by my colleague in his letter published to-day. In 1923 and 1924, the early days of insulin, I gave clear evidence from visitors and by myself, are better than set lectures or the display of cinema films, for at the latter one finds only the converted attend, and it is well known that cinema proprietors do not find such propaganda films at all profitable.

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[1] Clin. Jour., Feb. 8th and 15th, 1928.

THE INTEREST OF THE WORK

By way of compensation for any distasteful portion of the work of a tuberculosis officer there is its variety, for any clinic will provide plenty of material of interest, and so far as treatment or research are concerned I have entire liberty to do what I like, and since I have charge of beds I can admit my own cases and watch the effect of a given remedy. I see, too, a large number of non-tuberculous conditions —e.g., morbus cordis, neurasthenia, anæmia, bronchiectasis, bronchial asthma—so that it cannot be said that the work is wanting in clinical interest. Then, too, there is always the pleasure of seeing a really early case respond to prompt treatment.

From the public health aspect one cannot but lament the present economic stress and unemployment resulting in overcrowding and a chronic state of malnutrition, especially among children. The improvement that takes place with better housing and feeding is a sufficient indication of the main lines upon which legislation, hand in hand with philanthropy, will be found to be of practical service in the way of prevention in the future. To be able to render help to the practitioner, as well as to the patient, in a personal consultation at the bedside is another of my pleasures, and here again one feels, whether in confirming an already expressed opinion or in pronouncing judgment in a diagnosis, that it is worth while to be a specialist in the work instead of having it tacked on, so to speak, to a post in which one has to do schools, maternity work, infant welfare, and all the other sundries that go to make the work of a combined medical officer a glorious mixture of activities.

I have omitted to mention one thing which all my colleagues in the tuberculosis service deplore —namely, the large amount of clerical work, form writing, and the making of numerous returns to one's own as well as outside authorities, which has to be done. From various considerations it is not always possible to employ adequate clerical assistance, but it does seem to detract from the work when one has, as I have, to enter a name and address, in the case of a new patient, at least three times and sometimes more. To many medical men and women, not specially gifted with the mathematical mind, the filling up of the annual returns is nothing more nor less than a nightmare, but no doubt it is regarded as a pleasure by some.

Enough has been said to give some idea, I trust, of the daily work and routine of a tuberculosis officer, but let no one take up such an appointment unless he or she be a confirmed optimist.

PUBLIC HEALTH SERVICES

Influenza

The spread of influenza over the country is taking the course rendered familiar by previous winter epidemics, leaving room for doubt and uncertainty as to whether this or that locality will suffer sooner or more than others. Taking the 118 great towns as a whole, a sharp rise in reported deaths from influenza was apparent in the return for the week ended Dec. 10th, 1932, the figures [for successive weeks from Dec. 3rd on being 33, 68, 85, 120, 303, 681, and 1041. In London no indication of unusual incidence was seen until the week ended Dec. 31st, the figures for deaths from influenza for the last four weeks being 8, 25, 93, and 242. The epidemic began in the north; Glasgow reported 86 deaths already in the week ended Dec. 24th; Newcastle-on-Tyne, Liverpool, and Manchester suffered early, and are now through the worst. In Birmingham the epidemic started quite suddenly about 12 days before Christmas, when 10 per cent. of the employees of utility services were disabled; the maximum was reached shortly after Christmas, and the decline was rapid. There, as elsewhere, the epidemic was described as relatively mild, the incidence of pneumonia being quite small. Up to the week ended Dec. 31st the actual deaths from acute pneumonia in London were below those to be expected from the ten-year median value; in the following week London was 11 per cent. above expectations, England and Wales 60 per cent. above. In London the influenza has taken two familiar types, alimentary and respiratory, and, as mentioned in a clinical note on p. 141, the features of these two types have remained sharply distinct. Many hospitals in London and large centres have passed through anxious times owing to the numbers of the nursing staff down with influenza at the same time, but no serious results have been reported. Judging by reports, the west country has so far escaped, with the exception of Exeter.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 7TH, 1933

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 16 (last week 19); scarlet fever, 1802; diphtheria, 870; enteric fever, 21; acute pneumonia (primary or influenzal), 2816; puerperal fever, 37; puerperal pyrexia, 132; cerebro-spinal fever, 38; acute poliomyelitis, 9; acute polio-encephalitis, 2; encephalitis lethargica, 7; dysentery, 5; ophthalmia neonatorum, 72. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Jan. 10th–11th was as follows:—Small-pox, 52 under treatment, 7 under observation (last week 75 and 2 respectively); scarlet fever, 1790; diphtheria, 1678; enteric fever, 12; measles, 267; whooping-cough, 491; puerperal fever, 31 (plus 13 babies); encephalitis lethargica, 230; poliomyelitis, 3; "other diseases," 286. At St. Margaret's Hospital there were 15 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was no death from small-pox, 3 (1) from enteric fever, 25 (0) from measles, 12 (1) from scarlet fever, 34 (8) from whooping-cough, 40 (9) from diphtheria, 37 (8) from diarrhœa and enteritis under two years, and 681 (93) from influenza. The figures in parentheses are those for London itself.

Fatal cases of influenza were reported from 88 great towns outside London, the largest number of deaths being 163 at Birmingham, 45 at Newcastle-upon-Tyne, 24 at Sunderland, 23 at Liverpool, 22 at Manchester, 19 at Portsmouth, 14 at Leeds, 13 at Southampton, 12 each at Gateshead and Worcester. The fatal cases of enteric fever occurred at Wigan and Worcester. Measles caused 8 deaths at Birmingham, 4 at Leicester, 3 each at Gateshead and Liverpool. Diphtheria was credited with 4 deaths at Bootle, 3 at Leeds. In the same week Glasgow reported only 36 deaths from influenza, and 13 from whooping-cough.

The number of stillbirths notified during the week was 267 (corresponding to a rate of 39 per 1000 total births), including 50 in London.

COLDSTREAM COTTAGE HOSPITAL.—Last year there were 155 in-patients, an increase of 35, and their average stay rose from 19½ to nearly 24 days. There were 60 major operations.

GASTROSTOMY VERSUS INTUBATION

To the Editor of THE LANCET

SIR,—In his interesting letter Mr. E. Watson-Williams states as one of the disadvantages of gastrostomy :—

> Food is not taken by the natural channel, and is *not tasted*. The psychic effect, when the patient realises that he will never taste or swallow anything again, is often very bad. (Italics mine.)

During my hospital practice I tried to overcome this difficulty by the following method: When feeding by gastrostomy I always put in the patient's mouth one or two table-spoons of the food from the syringe, asked him to chew it properly and slowly, and then to spit it out with the saliva. I was brought to this simple method by the remark of one of our patients who was being given minced veal, "What a pity I cannot taste the meat; I like it so much." The patients were always very pleased and sometimes asked for some more spoonfuls.

I am, Sir, yours faithfully,

V. SUK.

Masaryk University Anthropological Institute,
Czechoslovakia, Jan. 9th, 1933.

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SIR,—Prof. Robertson often asserted that "all pain is mental," and those who practise his branch of medicine mostly agree with that dictum. If that is accepted, how does it work in with the various statements as they appear in an article in your issue for the 14th inst. under the above heading? Are not such statements very much on a line with the statement often heard from a nurse in reply to a doctor's inquiry—viz., "he has no temperature."

Is it not as futile to expect to avoid pain as it is to expect to avoid a temperature?

I am, Sir, yours faithfully,

Hove, Jan. 16th, 1933. E. ROWLAND FOTHERGILL.

NEW PREPARATIONS

To the Editor of THE LANCET

SIR,—Under this heading in your issue of Dec. 24th last (p. 1416) the statement is made that Essogen is ten times U.S. cod-liver oil strength. The official U.S.P. standard for cod-liver oil is that it should contain 50 curative doses for rats per gramme—i.e., the effective rat unit is 20 mg. Admittedly this standard is a very low one—much lower than the minimum blue value of ·6 specified in the new issue of the British Pharmacopœia. Exact comparison is impossible because of the weaknesses of the test specified by the U.S.P., but Essogen on the basis of blue value is more than 300 times the B.P. standard, and therefore must be of even higher relative potency as compared with the U.S.P. standard.

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SIR,—In his article on Phlebitis in THE LANCET of Jan. 14th, Mr. A. Dickson Wright mentions stagnation in the veins, due to rest in bed and cessation of muscular contractions, as a contributory factor. The following movement which can be made periodically by the patient is important for prophylaxis. The patient should lie or recline with his foot against a firm surface, such as a bolster or a bed-table up-ended with a pair of legs under the mattress. The big toe and heel are then applied to this surface, arching up the dorsum of the foot by means of the intrinsic muscles, and the back of the knee is pressed down against the mattress. There should be a slight extension of the hip-joint, and the patient should not press back his head and shoulders but should momentarily increase the pressure between the lumbar region and the mattress.

During this very mild activity a large proportion of the muscles in the limb are in use. Apart from the prime-movers the following muscles coöperate · those whose tendons cross the ankle-joint, muscles in the thigh and buttocks, also those in the lower abdominal wall. An adequate pumping effect on the venous system occurs throughout the limb with a minimum expenditure of energy. The psychological effect of getting the feet against a firm surface, and of doing something to shorten convalescence, encourages the patient to make periodically this small effort.

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clinical tests on myself and a few patients, that variations of 60 per cent. from batch to batch of both English and American insulin were not uncommon. This was immediately taken up by the Medical Research Council and the manufacturers, and a biological test on animals was worked out which narrowed the variations to under 10 per cent., which is the smallest variation that I can detect by the most careful work on diabetics. Since then I have always been on the lookout for changes in new batches. I use only two makes of insulin; between 1926 and 1929 there were three bad batches. Since then I have noticed no variation in them. Whenever a reliable patient suspects the uniformity of any new batch, as not infrequently happens, I always test it out, and the evidence usually shows the patient, and not the insulin, to be wrong. In patients on the most careful diet, insulin requirements often vary by more than 10 per cent. from day to day, depending on natural changes in foods (as you point out), and in activity and general health.

I know that the reliability of British insulin has always been recognised in Europe, and it is pleasing to note in foreign protocols how often it is used in accurate experimental work instead of the insulin produced in that country. I am a little surprised to gather that my colleague has so many unfortunate experiences with different batches of insulin, because, if he reserves, as he says, a whole batch for his personal use, that might be expected to be an adequate supply for some 50 years.

I am Sir, yours faithfully,

Harley-street, W., Jan. 14th, 1933. R. D. LAWRENCE.

"DISEASES OF THE BLOOD"

To the Editor of THE LANCET

SIR,—I have read with much interest the review of the second edition of my book "Diseases of the Blood," in your issue of Jan. 7th (p. 26). I was particularly charmed to see your reviewer's statement that "Misstatements of facts . . . are unfortunate"; I presume that no one could deny this, but it is especially unfortunate when such misstatements appear in a review. I am accused of having omitted reference to the value of iron in post-hæmorrhagic anæmia, but reference to the index of my book shows an entry "Iron, after hæmorrhage, 41." On this page I indicate the need for iron in cases of acute post-hæmorrhagic anæmia, and on the next page, in connexion with chronic post-hæmorrhagic anæmia, I assert that the medicinal treatment is the same as in the acute form. I also refer to the value of whole liver and of certain special forms of liver extract; a cross reference to p. 179 indicates the paragraph in which the essential characters of such an extract are described.

With reference to the anæmia of infancy. Your reviewer appears to contend that, because the red corpuscles rise after administration of iron, the anæmia is necessarily due purely to a deficiency of that metal; it may be so, but I doubt it, and do not feel that the controversy has been much advanced by his pontifical statement. I think that if he had read the book with more care he would have found that cases of acholuric jaundice with practically no splenomegaly are mentioned; equally, there is reference to the almost completely normal character of the blood during remissions.

I am unrepentant about my statement that "We are completely ignorant as to the mechanism by which the number of leucocytes in the circulation is regulated," but, of course, am well aware of the fact that nucleotide is capable of altering the number of the white cells in the blood. I plead guilty to the slip concerning phospholipin in the typical cells of Gaucher's disease, but do not feel that this is of much importance "in a book which will appeal to the general practitioner."

I should be very glad to hear the comments of your reviewer on my alleged "misstatements of facts."

I am, Sir, yours faithfully,

A. PINEY.

Pathological Department, The Cancer Hospital,
Fulham-road, London, S.W., Jan. 11th, 1933.

*** We should be loth to agree with Dr. Piney that scientific accuracy is not of much importance in a book intended for the general practitioner; we feel he should be given clear indications of treatment in common conditions. In post-hæmorrhagic anæmias iron and whole liver in large doses are of proved therapeutic value. Dr. Piney does briefly mention that iron should be given—we frankly admit the oversight—but he gives no indication of the extreme importance of adequate and persistent dosage, nor of the uselessness of certain of the preparations on the market. In acholuric jaundice he states that the blood always shows some deficiency of hæmoglobin and corpuscles, although Gansslen has reported a large group of cases with no anæmia. The fragility of the red cells does not invariably decrease after operation, it may indeed increase. Hyaline degeneration of the pulp arterioles, described as a common histological feature of the spleen in this disease, occurs in so many conditions as to be hardly characteristic of any one disease. The work of Doan and his collaborators on the control of circulating white cells merits discussion, even if Dr. Piney is unconvinced as to its interpretation; readers may be glad to turn to the admirable summary of the position in *Jour. Amer. Med. Assoc.*, 1932, xcix., 194.—ED. L.

CONTRACEPTIVES

To the Editor of THE LANCET

SIR,—It is not generally realised that at least 175 chemical contraceptives may be found upon the market. Many of these appear to depart markedly from the desired standards laid down by the leading workers in this field, and a similar state is to be found when mechanical methods are considered. It is for this reason that several firms have formed themselves into a group with the following objects in view: (1) to maintain a certain standard of purity and excellence in manufacture; (2) to focus attention upon such methods as are likely to meet with general success and to see that they are harmless to the user, easy to apply, and reasonable in cost; (3) to study the question of packing and deterioration and the issuing of seemly literature and advertising.

This group is the direct result of the museum which I have recently formed in the department of public health of the London School of Hygiene and Tropical Medicine where the many aspects of this difficult and multi-sided subject are dealt with. The formation of a similar group in the United States and on the continent is under consideration, and I submit that this is a most important step which not only will help to remove the stigmas which have so long existed, but may well aid contraception to become a worthy branch of preventive medicine.

I am, Sir, yours faithfully,

CECIL I. B. VOGE.

London School of Hygiene and Tropical Medicine,
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OBITUARY

SIR ROBERT JONES, Bt., Ch.M. Liverp., F.R.C.S. Eng.

LATE ADVISER IN ORTHOPÆDIC SURGERY, THE MINISTRY OF PENSIONS, AND INSPECTOR OF MILITARY ORTHOPÆDICS, A.M.S.

WE regret to record the death of the great orthopædic surgeon, Sir Robert Jones, which occurred on Saturday last, Jan. 14th, at Bodynfod Hall, Llanfechan, the house of his son-in-law. The medical profession has lost in him the most prominent British figure in orthopædics, and for his services to the wounded in the war the country owes him an unpayable debt.

Robert Jones was born at Rhyl in 1858 the son of a father bearing the same name; his mother was Miss Mary Hughes, member of a neighbouring family. Privately educated, he received his medical training at the Universities of Edinburgh and Liverpool, and qualified in 1878 as M.R.C.S., proceeding later to the fellowship of the Edinburgh College of Surgeons. He received at the outset of his professional career the impetus which led later to his distinguished position. He worked as apprentice to his uncle, Hugh Owen Thomas, the inventor of the Thomas's splint, who was the son of a famous and skilful bone-setter; so all that the unqualified manipulator had to teach was known from the start of his career to Robert Jones, who, moreover, always acknowledged his debt to this traditional and empiric learning. He commenced practice in Liverpool, and after holding some junior appointments quickly obtained a place first on the staff of the Stanley Hospital, and later on that of the Royal Southern Hospital.

SIR ROBERT JONES

[Photograph by Brooke Hughes

It was some time before his unusual grasp of the principles and his ready inventiveness in the treatment of orthopædic cases were perceived outside his own centre. His fellow orthopædists, however, soon came to regard him as a pioneer, recognising the practical nature of much of his original technique, and his skill alike in diagnosing the conditions and suggesting the course of treatment to be adopted. In those early days America and the continent knew Robert Jones better than did his own country. It was not so much by innovations that he attracted attention as by his skilful application of the old knowledge to meet the advance of general therapeutics. An increasing familiarity among medical men with the problems presented by the deformities and distortions following hereditary conditions or disabilities acquired in childhood called for developments in orthopædic work that had hitherto been unthought of; Robert Jones did the thinking, and by speech, pen, and clinical example inspired many followers. Some years before the European War he was a member of French, German, Swedish Italian, and American orthopædic societies, and when, in 1912, was invited to deliver the annual oration at the Medical Society of London he chose for his subject the surgical treatment of infantile paralysis, and threw powerful light upon the possibilities of effective treatment in many situations where surgical interference had appeared disappointing. His particular experience was gained in his wards at the Royal Liverpool County Hospital at Heswall, which owed its real inception, in 1909, to Robert Jones, and which is now amalgamated with the Liverpool Children's Infirmary. In 1913 he was president of the orthopædic section of the International Congress of Surgeons, held in London, and when the war broke out he had attained to such a position as to make him the ideal leader in the movement for the furnishing of organised orthopædic assistance to the wounded and injured in the war.

At the beginning of the war, when the wounded poured into this country as the result of great casualties and enforced retreats, all the British hospitals were soon full to overflowing, and auxiliary hospitals and command depôts became equally crowded. At the same time so large a proportion of surgeons were on service abroad that organisation for the treatment of this inrush of sufferers was wellnigh impossible to institute. This was Robert Jones's opportunity and magnificent use he made of it. The first task was to collect the cases most requiring attention. Investigation showed that in all the hospitals and depôts there were victims of ununited or badly united fractures, or of ankylosis, rendering function almost nugatory; cases, also, where badly devised operations had resulted in useless or flail joints, and cases of undiagnosed nerve lesions. In other cases operations had been well performed, but the appropriate after-treatment was wanting. In short, orthopædic surgery for the benefit of our soldiers was not being properly practised, and could not be properly carried out upon individual cases scattered all over the country by practitioners who did not claim to have any particular familiarity with the conditions to be met or the best methods of meeting them. It was then that the War Office decided that an effort should be made to segregate groups of cases into especially staffed and equipped centres, where continuity of treatment could be secured for such cases as injuries to peripheral nerves, ununited and malunited fractures, injuries to joints, and cases likely to result in deformities of the extremities. The first centre established was the hospital at Shepherd's Bush. Here Robert Jones started his great endeavour, aided by a band of enthusiastic assistants, many of them Americans, whose country had not yet espoused the cause of the Allies. The amount of good done was incalculable, and went on there and at the numerous other centres for many years, to the benefit of these men now pensioners or seeking to regain civilian employment. Indeed the development of orthopædic surgery under the urgent and tragic circumstance of the war became a striking feature in surgical science, expanding by rapidly increasing strides and coming to embrace a scope and range unthought of. The need for increased knowledge brought with it new theories and new practices based on pathological and physiological observation. Appliances for restoration of function and for re-education were soon forthcoming, and it became clear—for the first time to many doctors as well as to the public—that orthopædic surgery was not a story of special splints or of remedying particular deformities, but covered the large range of surgery implied in the restoration of function to nerves and muscles in deformed or disabled limbs. Three years after the cessation of hostilities Robert Jones edited the "Orthopædic Surgery of Injuries," written by his own colleagues attached to the orthopædic centres, which later became the special military surgical hospitals, and in a modest preface outlined the activities of which he himself was a chief promoter. At these hospitals there were eventually no less than 30,000 beds, a figure which gives some idea of the magnitude of the activities inspired by and largely controlled by Robert Jones.

On his seventieth birthday a group of surgeons, friends, and colleagues of many nationalities entertained Robert Jones to dinner and presented him with the Robert Jones Birthday Volume, a collection of 25 original essays bearing in different directions on the specialty of orthopædics, and inspired by the work done in coöperation with or at the instigation of their guest. At this dinner Lord Moynihan, then President of the Royal College of Surgeons of England, delivered a short address on Robert Jones, describing him as prophet, high priest, and practitioner, and setting out his personal qualities in the words: "Robert Jones," said Lord Moynihan, "speaks ill of no man. He seeks and finds good in all things and in all men. He sets an ideal and a standard of action in friendship which all strive to reach when with him. In a long and very intimate friendship I have never heard an unjust criticism, a cruel jibe, or a word of bitter cynicism on his lips. He covers his displeasure or stern disapproval by silence, or a restrained reproof that is often weightier than a torrent of words from others. His personality radiates cheeriness, good temper, and goodwill. All men are attracted by him, and in war-time conflicting temperaments found in him something that appeased their differences, assuaged animosities, and encouraged a desire for friendliness. He was then called upon to rule in various places, over colleagues at first unfriendly, openly antagonistic, indifferent to his rule, or incredulous of his practice. We were all amazed at his success in overcoming very real difficulties by gentleness, sympathy, a true understanding of the minds of others, and a tactfulness which in times of crisis was almost magical." None of those who knew Robert Jones personally would wish to have a syllable altered in this estimate of his actions and of the spirit which inspired them.

The honours which fell upon him in recognition of the work done before, during, and after the war were numerous. He received a C.B. in 1917, and in the same year was knighted. Two years later he was appointed K.B.E., and in that year was elected to the Fellowship of the English and the Irish College of Surgeons, being given also the American Distinguished Service Order. The Universities of Wales, Aberdeen, Liverpool, Harvard, Smith, and Yale gave him honorary doctorates, and the American College of Surgeons elected him a Fellow. He was appointed Knight of Grace of St. John of Jerusalem and consulting orthopædic surgeon to St. Thomas's Hospital. In 1926 he received his well-earned baronetcy. Of all these honours bestowed by the State and by his profession, it can be truly said that he earned the distinctions and that his colleagues rejoiced in his reception of them.

Sir Robert Jones married Susie, daughter of Mr. William Evans, of Liverpool, who died in 1918, and by whom he had one son, and a daughter, the wife of Mr. Frederick Watson, of Bodynfod Hall, Montgomeryshire, a champion of the cause of crippled children, a partner in the publishing house of James Nisbet and Co., and a well-known author.

RICHARD GILL, F.R.C.S. Eng.

Mr. Gill, who was for 35 years administrator of anæsthetics at St. Bartholomew's Hospital, and had been living in retirement since 1916, died at Shaftesbury on Jan 13th, after a short illness.

Born in 1856, Richard Gill gained the preliminary scientific exhibition at St. Bartholomew's Hospital in October, 1874. He went on to win most of the other scholarships open to him, and at the University of London took many honours in succession at the final B.Sc. in 1878, M.B. in 1879, and B.S. in 1880. He was admitted a Fellow of the Royal College of Surgeons of England in 1881, having passed the necessary examinations before he had attained the legal age of 25, and without presenting himself for the diploma of M.R.C.S. After being house physician at the Great Northern Hospital he became house surgeon to Sir William Savory at St. Bartholomew's Hospital, being the last to serve without an assistant house surgeon and to have a "take in" lasting a whole week. In 1881 he was appointed assistant chloroformist to Joseph Mills, the first whole-time anæsthetist to the hospital, succeeding him in 1893, when he was appointed chief chloroformist; the title of his appointment was soon changed to administrator of anæsthetics and demonstrator of anæsthetics in the medical school. He resigned both positions in 1916, when he was elected a governor of the hospital.

MR. GILL

[*Photograph by H. W. Barnett*

As an anæsthetist Richard Gill devoted his whole working life to St. Bartholomew's Hospital. He was an extremely fine administrator; it was an education in itself to see him give chloroform in a long and difficult abdominal operation. Requiring only a drop bottle and a small square of lint he would produce perfect anæsthesia and relaxation with a minimum quantity of the drug. He was equally successful with gas and ether administered with Clover's apparatus or by means of a small bag. As an anæsthetist he insisted that the patient should be watched carefully during the whole period of administration, and emphasised the necessity of considering him as an individual rather than as a machine to be kept in [illegible] of insensibility. He practised the axiom which he taught that automatic breathing is the true sign of anæsthesia. As a teacher he was excellent; as a lecturer he was difficult to follow and was unable to hold his audience, for his brain worked faster than his tongue. It happened from time to time when he was lecturing that he would pause, and after a longer or shorter interval would continue some sentences ahead of where he had stopped, leaving his hearers to fill up the gap for themselves. At the beginning of the war he was attached as anæsthetist to the First London General Hospital with the rank of Captain R.A.M.C. (T.), but found himself unable to adapt himself to military discipline.

A colleague writes: "In early life Gill had a remarkable power of assimilating facts which he could rapidly reproduce on paper, and he thus made an admirable examinee. Of this faculty he made little use in after life. He was wholly without ambition, and was content to lead the placid life of a philosopher when he might have enjoyed the stirring existence of a surgeon in the active practice of his profession. Averse from society, and somewhat of a recluse, he was but little known even to the men of his own generation. The few who knew him became his staunch friends, for they recognised his strict integrity and his entire absence of self-assertion."

Mr. Gill married Elizabeth Ann, daughter of John S. Bostock, M.R.C.S., who practised for many years at Horsham in Sussex. There were no children of the marriage.

WILLIAM GALBRAITH, L.R.C.P. Edin.

A FINE record of public service ended with the death of Dr. William Galbraith, of Gosforth, Newcastle, on Jan. 6th, at the age of 87. Born at Ayr and educated at Ayr Academy, he qualified at Edinburgh in 1878. For 50 years he was in practice at Gosforth, and during that time held the appointments of medical officer of health, police surgeon, and public vaccinator. In this half century he initiated many public health improvements which were reflected in a decreasing death-rate, so much so that Gosforth was locally known as a health resort. As a physician he had a high reputation among his fellow practitioners as a quiet and remarkably correct diagnostician. He was a founder and the oldest member of the Gosforth Medical Association. A friend writes that "he was the true type of the ideal family doctor; to him the interests of his patients and profession were first and the business side last, frequently to his own personal loss. Naturally he was beloved and honoured by all of his patients, for whom he always had a cheery word; his healthy physique and smiling, ruddy face gave a cheering stimulus to everyone. His long life was fully occupied by his work and his sport—for he was more than usually an all-round sportsman. As a young man he was a good footballer and cricketer; for many years he was a member of the Northumberland cricket club and the city golf club. His prowess at bowls was noteworthy, and he toured many parts of Britain with local teams playing tournaments. His annual holiday was spent in shooting and fishing in Scotland." Dr. Galbraith is survived by two daughters. Dr. Nicol Galbraith, medical officer of health for South West Kent, is his nephew.

THE LATE MR. CECIL BEADLES

Prof. G. Grey Turner writes: "Cecil Beadles was a wonderful fellow, though his accomplishments were only known to a comparatively small circle. For the past few years he demonstrated to me the new specimens which had been added to the College museum during the previous year—the annual show, as he called it. He knew every specimen and every detail of the history available and was always ready to add to the interest of our talk by referring to other specimens in the museum, or by deploring the lack of something he sorely wanted. His anxiety to add to the collection in spite of his failing health gives something of the Hunterian ring to the last letter I had from him.

"'I enjoyed going round the show with you,' he wrote, 'and am always pleased to see the interest you take in it. Have you any specimens you think of presenting for next year? If so, I should be glad to have them as soon as possible, as I want to push on as much as possible during the next month or two. *I fear being laid up in the winter months.* I already have a fair number in preparation for 1933: some quite good things. Amongst these are some gall-bladders from Cairns Forsyth, a finger with radium carcinoma from Cuthbert Wallace, a heart with extraordinary dilatation of coronary vein—but I won't anticipate further. By the by, have you any specimens of sarcoma of bowel you can give us? we are badly off for these.'

"In preparation work Beadles was truly a marvel, and the way he could decide exactly how to cut a specimen in order to bring out its best features was almost uncanny. Nowhere in the world can better specimens be found than those prepared and mounted by his own hands. But he was not only a morbid anatomist, for he always corrected his observations by microscopical investigation, and had very clear views on pathological problems in general."

MEDICAL NEWS

University of Cambridge

DIPLOMA in MEDICAL RADIOLOGY AND ELECTROLOGY

The committee for medical radiology and electrology have approved the theses of the following candidates:—

Margaret A. Bromhall, J. S. Brown, G. T. Calthrop, E. N. Cook, E. R. Crisp, A. C. Devaraj, Nathaniel Fram, M. H. Hellman, R. F. Innes, J. N. Jacobson, S. A. Nagga, J. J. O'Grady, R. N. Perrott, F. G. Stewart, and E. R. Williams.

At recent examinations the following were successful:—

Part I.—J. S. Austin, L. R. B. Birt, L. G. Blair, Isedor Fine, F. C. Golding, Elizabeth M. Haworth, Robert McWhirter, W. W. Main, R. F. May, R. J. L. O'Donoghue, R. M. Patterson, R. F. Phillips, E. J. Rawnsley, William Sowerby, Elizabeth M. F. Taylor, A. R. Thomas, J. Z. Walker, and B. W. Windeyer.

National University of Ireland

University College, Cork.—At recent examinations the following candidates were successful:—

M.D.

Myles McSwiney.

M.B., B.CH., AND B.A.O.

Charles Delea and J. J. O'Sullivan.

Royal College of Surgeons of England

A quarterly meeting of the council was held on Jan. 12th, with Sir Holburt Waring, the president, in the chair. Resolutions of condolence were passed on the death of Mr. H. S. Clogg, chairman of the court of examiners, and of Mr. C. F. Beadles, pathological curator of the museum.

Diplomas were granted, jointly with the Royal College of Physicians, as follows:—

Public Health.—S N. Bandyopadhya, W. D. T. Brunyate, Alice E. N. Gilby, A. W. Johns, Stephen Knight, Mohan Singh, M. M. Syddiq, L. D. Williams, and H. M. Willoughby.

Tropical Medicine and Hygiene.—Mabel G. Brodie, D. D. Karunaratna, C. K. Lakshmanan, and V. Nadarajah.

Psychological Medicine.—Sophia Antonovitch, G. G. Brown, Samuel Carden, H. W. D. Crook, J. L. Faull, B. M. C. Gilsenan, Kenneth Hazell, J. K. C. Liddell, J. R. Murray, F. E. North, T. P. Parr, Norman Rawstron, G. M. Smith, and G. V. Stephenson.

Laryngology and Otology.—Robert Evans, Leonard Jacobson, Joshua Mazell, H. C. Meathrel, K. V. B. Pillai, A. F. Quark, Aaron Rakoff, Arnold Rose, B. K. Sheorey, M. R. Sheridan, and I. B. Thorburn.

Medical Radiology.—A. A. Digges la Touche and G. D. Stever

Sir Cuthbert Wallace was appointed Hunterian orator for 1934. Mr. T. W. P. Lawrence was appointed acting pathological curator. Prof. R. E. Kelly was re-elected a member of the court of the University of Liverpool for the ensuing three years. The Hallett prize for anatomy and physiology was awarded to Mr. S. G. Nardell, of King's College, London.

Forthcoming lectures.—The following lectures will be given on Mondays, Wednesdays, and Fridays during January and February: Jan. 23rd, Mr. Arthur Edmunds on unsuccessful appendicectomy; Jan. 25th, Mr. Harold Burrows on the induction of cancer in animals by pure chemical substances; Jan. 27th, Mr. W. E. M. Wardill on the principles of treatment of cleft palate; Jan. 30th, Mr. Kenneth Walker on per-urethral operations on the prostate; Feb. 1st, Mr. P. H. Mitchiner on the treatment of burns and scalds, with special reference to the use of tannic acid; Feb. 3rd, Mr. J. Paterson Ross on sympathectomy as an experiment in human physiology; Feb. 6th, Mr. H. P. Winsbury-White on the paths of infection between the genital organs and the urinary tract; Feb. 8th, Mr. Stanford Cade on radiation treatment of cancer of the mouth and pharynx; Feb. 10th, Mr. H. Jackson Burrows on tissue culture in its relationship to surgical pathology; Feb. 13th, Mr. P. N. B. Odgers on the anatomy of the lumbar and lumbo-sacral diarthroidal joints in man; Feb. 15th, Prof. R. J. S. McDowall on experimental shock, with special reference to anæsthesia; Feb. 17th, Mr. R. W. Raven on diverticula of the pharynx and œsophagus, with special reference to the morphological and embryological aspects; Feb. 20th, Mr. Laurence O'Shaughnessy on thoracic surgery—the factor of post-operative infection; Feb. 22nd, Mr. G. A. Mason on the surgical significance of the vitelline duct; Feb. 24th, Mr. E. R. Flint on pre-operative procedure. All the lectures will be given at the College at 5 P.M.

University of London

Six lectures on the Physiology of the Nervous System in Man will be given at the Middlesex Hospital medical school, Mortimer-street, W., by Prof. Samson Wright, at 5 P.M. on Tuesdays and Thursdays from Feb. 7th to 23rd inclusive. No tickets are required.

At a meeting of the court on Jan. 11th, with Lord Macmillan, the chairman, presiding, it was announced that the Clothworkers' Company, the Grocers' Company, the Drapers' Company, and the Skinners' Company had each decided to make grants to the university in the shape of annual payments extending over a series of years. These grants will amount in all to £20,000 from the Clothworkers' Company, £10,000 from the Grocers' Company, £5000 from the Drapers' Company, and £5000 from the Skinners' Company. Like the grants already announced from the corporation of the City of London, from the Mercers' Company and from the Fishmongers' Company, these benefactions will be applied towards meeting the cost of the new ceremonial hall to be erected on the university's site in Bloomsbury.

Society for Relief of Widows and Orphans of Medical Men

At a quarterly court of directors held on Jan. 4th, Dr. W. Culver James, the senior Vice-President, being in the chair, grants amounting to £1975 were voted for the half-yearly payments to the widows and orphans in receipt of relief. Of this amount, £112 10*s*. was for special grants to orphans to enable them to continue their education, or assist them in embarking on careers. The expenses of the quarter were £88 2*s*. 6*d*. In December last £640 was distributed as a Christmas present. There are now 52 widows and seven orphans in receipt of relief. Six new members were elected at the meeting, and two resignations were accepted. Membership is open to any registered medical practitioner who at the time of his election is residing within a 20-mile radius of Charing Cross. Application forms from the secretary of the society at 11, Chandos-street, London, W.1.

Fellowship of Medicine and Post-Graduate Medical Association

Arrangements for next week will be found in our Medical Diary. A course in Dermatology will be given at St. John's Hospital from Jan. 30th to Feb. 25th, which will include clinical instruction daily, and lectures on Tuesdays and Thursdays. There will also be a course in gynæcology at the Chelsea Hospital from Feb. 6th to 18th (either morning or afternoon sessions may be attended); an all-day course in diseases of the chest at the Brompton Hospital from Feb. 6th to 11th; a course in antenatal treatment at the Royal Free Hospital from Feb. 3rd to March 11th on Fridays at 5 P.M.; and a week-end course in physical medicine at the London Clinic and Institute of Physical Medicine on Saturday, Feb. 11th, and Sunday the 12th. Courses, lectures, and demonstrations are open only to members and associates of the Fellowship of Medicine, and further particulars may be had from the secretary of the Fellowship at 1, Wimpole-street, London, W.1.

Sir James Dundas-Grant has been elected an honorary member of the Italian Society of Laryngology, Otology and Rhinology.

Royal Aeronautical Society

On Thursday, Jan. 26th, at 6.30 P.M., Wing-Commander G. S. Marshall, M.R.C.S., is addressing this society on The Physiological Limitations of Flying. The lecture will be given in the hall of the Royal Society of Arts, 18, John-street, Adelphi, London, W.C.

Post-Graduate Work in Newcastle

Four special courses have been arranged for the months of January, February, and March by the University of Durham. On Wednesdays at 4 P.M., beginning on Feb. 8th, there will be weekly lectures on diseases of infancy and childhood, either in the Babies' Hospital or in the Royal Victoria Infirmary, Newcastle. It is proposed that the course on diseases of the eye should meet at the Royal Victoria Infirmary on Mondays, beginning on Jan. 23rd, at 12.0 noon, but the time may be altered by agreement. Ten meetings will be held dealing with infectious diseases and tuberculosis at the City Hospital, Walker Gate, on Thursdays at 3.30 P.M., commencing on Jan. 19th. From Tuesday, Jan. 24th, there will be ten weekly demonstrations at 3 P.M. on diseases of the skin at the Royal Victoria Infirmary. Fees are charged for these courses, and application should be made to the registrar of the College of Medicine, Newcastle. Classes for clinical instruction in medicine and surgery will be held every Sunday morning at 10.30 from Jan. 22nd to March 26th, at the Newcastle General Hospital.

Grants in Aid of Scientific Research

The Council of the British Medical Association announces that it is prepared to receive applications for research scholarships as follows: an Ernest Hart memorial scholarship, of the value of £200 per annum; a Walter Dixon scholarship, of the value of £200 per annum; and three research scholarships, each of the value of £150 per annum. These scholarships are given to candidates whom the Science Committee of the Association recommends as qualified to undertake research in any subject (including state medicine) relating to the causation, prevention, or treatment of disease. Each scholarship is tenable for one year, commencing on Oct. 1st, 1933. A scholar may be reappointed for not more than two additional terms, and is not necessarily required to devote the whole of his or her time to the work of research, but may hold university or other appointments, provided the duties do not interfere with his work.—Grants: The Council of the Association is also prepared to receive applications for grants for the assistance of research into the causation, treatment, or prevention of disease, when preference will be given to applicants who propose as subjects of investigation problems directly related to practical medicine. Applications for these scholarships and grants must be made not later than Saturday, May 20th, 1933, on a form, supplied on application to the Medical Secretary of the Association, B.M.A. House, Tavistock-square, London, W.C.1. They must be accompanied by the names of three referees, competent to speak as to the capacity of the applicant for the researches proposed.

Medical Society of Individual Psychology

The annual dinner of this society was held on Jan. 12th at the Florence Restaurant, London, with Prof. W. Langdon Brown, the chairman, presiding. Dr. F. G. Crookshank, the hon. secretary, announced the result of elections for membership and associateship, bringing the list to 97, and the chairman, commenting on the increase from 9 in 1930 to 97 in 1933, proposed the election of Drs. Zilahi, Seif, and Alfred Adler as honorary members. This was carried with acclamation, and Prof. Langdon Brown, announcing the completion of the "century," suggested that Dr. Adler should be invited to become honorary president of the society. He then proceeded to give the toast of the society, remarking that sound critics had declared the outstanding medical event of 1932 to have been the progress made in the recognition of psychology as an integral part of medicine and a necessity to the study of the individual patient. This advance, he declared, was in great measure due to the work of the society. Dr. O. H. Woodcock gave the health of the guests, including Dr. Henry Devine, president of the section of psychiatry of the Royal Society of Medicine, and Dr. Graham Howe, president of the medical section of the British Psychological Society. Dr. Devine replied in a speech, emphasising the links between general medicine and psychology and psychiatry. Dr. Crookshank proposed the health of the chairman in terms expressive of the great gratitude felt by every member of the society for the invaluable help, guidance, and support afforded them by him during the last two years. Prof. Langdon Brown, in reply, declared his confidence in the assured future of the work of the society.

remuneration. One of these curative workshops, where physical and occupational therapy are used for industrial accident cases, received some $8000 in 1920 from insurance companies in payment for treatment of cases. Insurance companies would be unlikely to expend this money unless they were satisfied that the time for payment of compensation was thereby reduced.

The organisation of these workshops varies a little. One in Rochester, N.Y., receives all types of cases. Patients are referred to it by hospital clinics, by various social and relief agencies, and by private physicians.

> All patients go to the occupational therapy department on admission and from there those requiring special training are passed on to the industrial therapy department where they receive a hardening process until they are capable of full-time employment. The work is done under normal industrial conditions under an experienced foreman. Payment is made on a piece-rate basis but is very small and is in no way a substitute for compensation. Cases of tuberculosis, heart disease, psychoses, neuroses, post-operative and orthopædic conditions are all treated in this workshop which has proved to be self-supporting and reports a return of about 64 per cent. of the patients treated to full-time work. Another shop gives free treatment in the shop and at home to cases unable owing to their illness to attend the shop, and charges $1 for patients outside the city and gives instruction to non-patients for $1 per lesson. Each patient must bring a card from his doctor stating what sort of work he is capable of and how much he may do each day. The shop pays for the materials and the patient is paid for work when it is sold. Workers may keep their own work by paying for the material and a small extra charge to cover overhead expenses. About 135 patients are treated in this workshop.

Some private clinics have also been opened by trained occupational therapists. In them no cases are received without a medical prescription. One such clinic reports special success with cases of infantile paralysis sent for functional restoration, and also several cases where, owing to some permanent disability following accidents, patients have been trained in some new craft which enables them again to earn their own living—for example, a chauffeur who had become blind, became an efficient rug-maker; and a blacksmith who was taught a specialised form of wrought-iron work became so proficient at it that his former employer fitted up a workshop for him in his own home and kept him permanently supplied with work.

Perhaps most of all in the case of tuberculous patients do these industrial workshops meet an important need, and for this particular group of patients colonies or centres have been established in other countries, as for example at Papworth Hall, in England, and by the Italian Red Cross at Al Cuasso Al Monte, in Italy.

In Mental Hospitals

It is probably in mental hospitals that the greatest scope for occupational therapy is found. The patients who enter these hospitals fall into two groups: first, those who may recover; and secondly, the chronic cases who will in all probability spend the rest of their lives in hospital. The occupational therapy department is concerned with them all. The aim of those in charge of these patients is to help them to readjust themselves to life and to guide them back to a useful life in the outside world or in the hospital community.

Taking as its aim the making of each patient into a socially useful member of the community, occupational therapy in a mental hospital includes: (1) therapeutic work which is prescribed as a definite part of treatment, and with the intention of improving the patient's mental state; and (2) non-therapeutic work among chronic cases which is none the less valuable in that it keeps the patients healthy and as near normality as is possible for them, and because it makes possible the carrying on of the work of the hospital and enables those who would otherwise be a burden on the community to contribute in some measure to the cost of their maintenance. In this class are found the imbeciles, the feeble-minded, the secondary dementias, and a number of dementia præcox cases, all of whom are capable of good work under supervision. Though these patients are not likely to improve they should be kept occupied, first, because occupation of some kind is necessary to a normal life and they will be much happier and healthier if useful members of the hospital community; secondly, because, as is constantly being proved in the wards of a mental hospital, "Satan finds work for idle hands to do"; thirdly, as a duty to society; and lastly, because occupation retards regression and dementia.

One aims, of course, at employing all these patients in the hospital industries; a few can be sent there immediately on admission but the majority cannot, and it is for this reason that a properly organised occupational therapy department, with different grades as it were, is of value. Such a department will include provision for the employment of patients on admission. This may be in bed, in a ward occupational therapy class, or in the work of the ward. In this grade the work is therapeutic; the patients are under constant individual supervision, and the work should be carefully and deliberately prescribed with the intention of helping them towards recovery, or with the purpose of training them to become useful hospital workers. From this grade the patients are passed on—the possible recoveries to larger occupational therapy centres, for example, a sewing-room or weaving or handicrafts room, where they will receive less individual attention but will still be under the constant supervision and guidance of an instructor who will understand their mental state and endeavour to select the form of occupation that is most likely to benefit them, and they should spend part of each day in one or other of these classes until discharged from the hospital. The chronic cases are passed on to the hospital industries: laundry, sewing-room, tailor's and carpenter's shops, &c. Experience has shown that chronic cases who have been sent to the workshops shortly after admission have frequently been returned to the ward as unfit, but the same patients, after some weeks' training in a small centre, get into the way of regular occupation and when sent again prove to be useful workers.

Many chronic cases, of course, cannot be sent to the workshops; some of these can be taught to work in the wards but others, either because their mental state remains too acute—they are too noisy, destructive, restless, agitated, liable to impulsive outbursts—or because they remain incapable of attending to themselves in any way without constant stimulation. Such patients drift into the acute or "refractory" or the "lost" wards of the hospital, and until recently their condition has been regarded as hopeless. Handicraft classes, however, when started in the "refractory" wards have shown that a large number of these patients can be taught to occupy themselves usefully for long periods each day. The type of work given to them is necessarily limited as nothing requiring tools with which they might injure themselves or others may be introduced into such wards, but rug-making; certain kinds of weaving, needlework, basketry, and the preparation of old "useless" material—i.e., unravelling of old stockings, tearing into strips of old materials for rug-making, &c.—will provide an adequate variety of occupation which, besides being useful, will keep such patients employed and out of mischief and introduce into the ward an atmosphere of quiet and industry in place of one of quarrelling, noise, and strife.

HABIT-TRAINING CENTRE

For the treatment of the "lost" patients, the majority of whom belong to the dementia præcox group, the habit-training centre has been introduced. These patients have gradually lost interest in the external world, till finally they have ceased to take any interest in anything outside the world of phantasy in which they live. They are completely indifferent with regard to their personal appearance and many reach the stage where they are faulty in habits and will neither wash, dress, nor feed themselves. Superficially there is no apparent difference between these "lost" patients and those cases of secondary dementia who have reached a similar stage, but there is this difference, that whereas in the latter, though the progress of dementia may sometimes be retarded for a time, they do not improve; among the dementia præcox cases from time to time patients do improve, and when they improve they show very little sign of mental deterioration. It is also found that when one has time to persevere with individual patients and make them attend to what one wants them to do, they can do it perfectly well.

They have regressed to a state similar to that of babyhood where everything is done for them, where they have no responsibilities of any kind, and where their mind is occupied in a world of its own. Habit-training is necessary in a child to teach him to control his own body and to adapt himself to his surroundings. Physical control he learns by developing regular habits, emotional control through his work and play with others. The foundation of a habit depends upon repetition and upon never allowing an exception, and it is very little use to make a patient clean his teeth or button his shoes, or tidy his hair one day then leave him for a week, then start teaching him again. The chief value of the habit-training centre lies in the fact that every patient is supervised and trained every day until new and correct habits are formed. A definite schedule is followed from the moment the patients get up in the morning till the moment they go to bed and, where necessary, during the night. It is arranged as far as possible so that the patient leads a normal life and includes work, exercise, and play.

The following programme[*] is adopted in the habit-training centres of the New York State mental hospitals:—

A.M.—6: Rising bell. 6 to 7: Wash, brush teeth use mouth wash, dress, lace shoes, comb hair, air beds properly. 7 to 7.30: Breakfast. 7.30 to 8.30: Train patients to make beds, sweep floors, and general care of wards. 8.30 to 8.45: Prepare for physical exercise. 8.45 to 9.30: Marching, free hand calisthenic work. All windows open, or exercise carried on out of doors. Pass water. 9.30 to 11: Assigned occupational work, except with certain groups when the time is limited by the physician. 11 to 11.30: Water, make person tidy for dinner. 11.30 to 12: Line up to roll call for dinner.

P.M.—12 to 12.30: Dinner. 12.30 to 1.30: Absolute rest. 1.30 to 2: Pass water, prepare for occupational treatment (brush hair, wash hands). 2 to 3.45: Assigned occupational work. 3.45 to 4.30: Walk out of doors three-quarters of an hour. 4.30 to 5: Water, make person tidy for supper. 5 to 5.30: Supper. 5.30 to 7.30: Comfortable on ward, reading, games under direction, singing if possible. 7.30 to 8: Wash, brush teeth, ready for bed. Bed-wetters should be taken to toilet at regular intervals during the night; at 10 P.M., 2 and 6 A.M.

Occupational therapy in this ward consists of unravelling and winding, rug-making, weaving on frames, raffia and basketry work, brush-making, and needlework.

The habit-training centre consists of 25 patients, 3 nurses, and an occupational therapist.

One hospital started a ward of this kind in 1927 with 12 patients and the results of the treatment have been such that they now have five classes, the ward consisting of 70 instead of 12 patients, and they are hoping to organise classes for another 70 in the near future. Of the 70 who have received treatment at the centre they report that instead of 70 patients requiring handfeeding, 21 now do; instead of 30 requiring dressing, 3 now do. There has been marked improvement in 20 per cent. of the cases, moderate improvement in 10 per cent., and no change in 10 per cent. Another hospital reports that of 75 cases treated, 12 improved sufficiently to be sent home on trial, 13 to be sent to the hospital industries, and 24 to be sent to better wards where individual attention was not considered necessary.

All the cases treated have been of the lost, deteriorated type; better results are naturally obtained with early cases than with those in whom bad habits have existed for years, and the cases treated in the habit-training centres up to date have been definitely selected. They must (1) be under 35 years of age; (2) not have been more than 15 years in a mental hospital; (3) have been of fair mental development before the onset of their illness.

The amount of help that a patient may obtain from occupational therapy depends in a very large measure upon the occupational therapist, upon her tact, sympathy, and power of understanding the patient's mental state and individual needs. In most cases any employment is better than none, but work selected for each individual patient with his or her particular needs in view is likely to help them far more than work given to them haphazard. For example, if a patient is given work that she is mentally incapable of doing satisfactorily she will become depressed, her lack of self-confidence may be increased, she will lose interest, and probably give it up. On the other hand, if an intelligent patient is given something mechanical that requires very little concentration, she will do it mechanically and will occupy herself during the whole period of the class, but the therapeutic value of the work will probably be practically nil. The purpose of the occupation is to engage the patient's mind so that while she is at work the sense of depression or the delusions from which she suffers, or the hallucinations which distress her when her attention is not otherwise held, are driven out.

This is illustrated in the case of a restless patient suffering from distressing auditory hallucinations who was sent to the occupational therapy department shortly after her admission to the hospital. She was put to work at rug-making on a loom. The work was new to her and occupied all her attention. She said that while she was busy she did not "hear the voices," looked forward to the class and improved generally for about a fortnight. Then she became restless and anxious again and her work no longer helped her. She had been working on a plain rug and it was found that she could now do the work quite mechanically without paying much attention to it; she was moved to another rug in which a complicated pattern was being introduced which required her full attention and again she improved. The patient herself noticed what happened and next time asked for a change of occupation.

It must be remembered, however, that work in the occupational therapy class is not necessarily the best treatment for all patients; some will improve more rapidly as ward-workers.

For example one overactive patient who was rather resentful of her detention in hospital, on being asked at the end of a couple of weeks how she was getting on in the handicrafts class, shrugged her shoulders and said, "Oh, you mean the kindergarten class, waste of time!" She was handed over to the charge nurse who employed her in the ward where she settled down and became much happier and more amenable to treatment.

On the other hand many patients, if given mending or ward work to do will become resentful and say that if they can do that kind of thing in hospital they could be doing it at home, that they did not come to work, &c. It is for the occupational therapist to discover the particular need of each patient, and it will thus be realised how important it is to have trained workers.

Training for Occupational Therapy

In this country there has been until quite recently no recognised training centre for the occupational therapist. The work has been done in some hospitals by nurses who, after taking their nursing certificate, learn some handicrafts and then take on the work of occupational therapist; others have had no medical training, but have a technical knowledge of certain crafts; both learn gradually by experience how to make their work of therapeutic value and not simply a form of employment. In the United States there are a number of recognised training schools, the students of which, when they have completed their remuneration. One of these curative workshops, where physical and occupational therapy are used for industrial accident cases, received some $8000 in 1920 from insurance companies in payment for treatment of cases. Insurance companies would be unlikely to expend this money unless they were satisfied that the time for payment of compensation was thereby reduced.

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[*] Reproduced by kind permission of Mrs. E. Clark Slagle, Director of Occupational Therapy, New York State Department of Mental Hygiene.

The organisation of these workshops varies a little. One in Rochester, N.Y., receives all types of cases. Patients are referred to it by hospital clinics, by various social and relief agencies, and by private physicians.

> All patients go to the occupational therapy department on admission and from there those requiring special training are passed on to the industrial therapy department where they receive a hardening process until they are capable of full-time employment. The work is done under normal industrial conditions under an experienced foreman. Payment is made on a piece-rate basis but is very small and is in no way a substitute for compensation. Cases of tuberculosis, heart disease, psychoses, neuroses, post-operative and orthopædic conditions are all treated in this workshop which has proved to be self-supporting and reports a return of about 64 per cent. of the patients treated to full-time work. Another shop gives free treatment in the shop and at home to cases unable owing to their illness to attend the shop, and charges $1 for patients outside the city and gives instruction to non-patients for $1 per lesson. Each patient must bring a card from his doctor stating what sort of work he is capable of and how much he may do each day. The shop pays for the materials and the patient is paid for work when it is sold. Workers may keep their own work by paying for the material and a small extra charge to cover overhead expenses. About 135 patients are treated in this workshop.

Some private clinics have also been opened by trained occupational therapists. In them no cases are received without a medical prescription. One such clinic reports special success with cases of infantile paralysis sent for functional restoration, and also several cases where, owing to some permanent disability following accidents, patients have been trained in some new craft which enables them again to earn their own living—for example, a chauffeur who had become blind, became an efficient rug-maker; and a blacksmith who was taught a specialised form of wrought-iron work became so proficient at it that his former employer fitted up a workshop for him in his own home and kept him permanently supplied with work.

Perhaps most of all in the case of tuberculous patients do these industrial workshops meet an important need, and for this particular group of patients colonies or centres have been established in other countries, as for example at Papworth Hall, in England, and by the Italian Red Cross at Al Cuasso Al Monte, in Italy.

In Mental Hospitals

It is probably in mental hospitals that the greatest scope for occupational therapy is found. The patients who enter these hospitals fall into two groups: first, those who may recover; and secondly, the chronic cases who will in all probability spend the rest of their lives in hospital. The occupational therapy department is concerned with them all. The aim of those in charge of these patients is to help them to readjust themselves to life and to guide them back to a useful life in the outside world or in the hospital community.

Taking as its aim the making of each patient into a socially useful member of the community, occupational therapy in a mental hospital includes: (1) therapeutic work which is prescribed as a definite part of treatment, and with the intention of improving the patient's mental state; and (2) non-therapeutic work among chronic cases which is none the less valuable in that it keeps the patients healthy and as near normality as is possible for them, and because it makes possible the carrying on of the work of the hospital and enables those who would otherwise be a burden on the community to contribute in some measure to the cost of their maintenance. In this class are found the imbeciles, the feeble-minded, the secondary dementias, and a number of dementia præcox cases, all of whom are capable of good work under supervision. Though these patients are not likely to improve they should be kept occupied, first, because occupation of some kind is necessary to a normal life and they will be much happier and healthier if useful members of the hospital community; secondly, because, as is constantly being proved in the wards of a mental hospital, "Satan finds work for idle hands to do"; thirdly, as a duty to society; and lastly, because occupation retards regression and dementia.

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The need that is felt for occupation and self-expression in some form by most individuals is llustrated if one walks through the wards of a mental hospital in which no form of occupation is provided. Patients are to be seen attempting to provide it for themselves, some may be seen knitting on hairpins, unravelled stockings being used for wool; odd things being made with ingenious tools they have created for themselves, sometimes beautiful embroidery is being done on old scraps of material. Some time ago an exhibition was held at a mental hospital in the United States of this kind of work done by patients in the hospital. Some of the exhibits had been created simply for the pleasure of producing something beautiful or useful; others, however, were of greater interest, for example, several complicated wood and metal machines one of which, the patient who made it claimed, controlled all the deliberations of the League of Nations, while another was said to regulate the movements of the universe and to direct the stars in their courses. The examination of this unguided occupation shows that what might be useful labour is being wasted, beautiful work often being done on worthless material; that great ingenuity is being used to no purpose, and in addition to this the work is often carrying the patient further into the world of phantasy and strengthening and emphasising delusions.

The occupation of the sick is still regarded by many as a diversion or amusement which will " take the man out of himself " for a short period and thus temporarily relieve his trouble, and this was no doubt the original purpose of those who attempted to employ their patients and it still serves this undoubtedly important purpose, but experience has shown those who have used it that it may be made to serve many other purposes and may, if prescribed and applied scientifically, prove a valuable form of therapy instead of an amusement which may or may not benefit the patient. It must be always remembered that occupational therapy is only a part of general therapy. It does not cure, nor does it claim to do so, but it does assist and hasten cure.

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A CHILD GUIDANCE CONFERENCE

THE staffs of all the clinics in Great Britain organised on child guidance lines met in conference on Jan. 7th–8th in London, with Dr. William Moodie as president. After the first two sessions, the psychiatrists, psychologists, and social workers met separately under the chairmanship of Dr. Emanuel Miller, Dr. Lucie Fildes, and Miss Doris Robinson, respectively, who reported to a final meeting upon the general findings of the three sections.

The psychiatrists discussed the status of the social worker in relation to the psychiatrist and the families being investigated. While the social worker was trained to take a detached view of the field she was investigating, there was some danger, it was felt, of her establishing such emotional relationships with the family that the work of the psychiatrist might thereby be handicapped. While the value of the unity of psychiatrist, social worker, and psychologist was recognised, it was felt that a clinic was most successful where the physician maintained his authority in directing the social worker; in making suggestions as to approach; and deciding at case conferences where the future treatment of the child should lie—that is, in the psychiatric, the social, or the psychological field. The open case conference on a half-developed case was apt to misrepresent to casual visitors the work of child guidance. The investigation of play, both group and individual, was regarded as of first importance for diagnosis and cure in any clinic. Much could be gleaned of a child's social behaviour, intelligence, and emotional reactions from these observations, but it was premature to base their interpretation on current theories. The value of personality tests was considered, particularly the use of the Rohrschach tests; it was felt that discoveries could often be made on purely clinical lines without the use of time-devouring tests.

The social workers' group discussed means of organising their work under methods of treatment varying according to the views of the psychiatrist with whom they work. In small clinics where medical staff is part-time only, much responsibility for adjustment falls upon the social worker. Emphasis was laid on the need, when treating behaviour problems, of knowing working-class living conditions and standards, and of basing plans upon the real possibilities for adjustment.

In the psychological section discussion on clinical diagnosis and treatment developed the following points. Individual free play is recognised as a method of observation and as of probable therapeutic value: in certain selected cases more organised social and constructive play activity may be a profitable line of treatment. Control groups are necessary for the provision of data bearing on the value of treatment; though difficult, this method of evaluation is not impossible. The most hopeful line of growth of personality tests appears to be in the discovery of group factors underlying certain types of behaviour. While work in these directions has already given profitable results, much more experiment is needed before they can be used clinically.

The conference was held at the Institute of Medical Psychology under the auspices of the Child Guidance Council of Great Britain.

NURSING HOMES

Two small books recently issued provide between them probably as much information about nursing homes in this country as can be made available without infringing laws, written and unwritten. What a doctor really wants to know about a home is whether the accommodation and food is good for the price charged; whether the amount of actual nursing provided, and personal attention, day and night without extra charge for a " special," is at least up to the somewhat low standard customary in such institutions; whether there is a lift; whether the patient's bell is answered promptly; whether trained nurses only are employed; and many other things of this kind. This information is, however, unobtainable, except through personal experience; incidentally, a record of impressions of any particular home mentioned would soon make a directory of names and addresses a very useful document to its owner and his patients. Nursing Homes, 1933,[1] provides a list of registered nursing homes in England and Wales, Scotland, and Ireland, arranged according to counties and towns, with full address and telephone number, and a note whether medical, surgical, maternity, or only convalescent cases are accepted. Where, as sometimes occurs, more particulars are available among the advertisement pages, a reference to the appropriate page is also given; but even there the weekly terms are not always stated. London nursing homes are classified under postal districts. The book also contains a short list of mental homes, no indication being given whether certified or uncertified, or both types of cases are accepted. In the advertisement pages are set out trained nurses' institutes, hotels, and guest houses, a scholastic and training, may become registered as occupational therapists.

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[1] Edited by J. Eaton Hosking. London: Ernest Benn, Ltd., 1933. Pp. 257. 4s.

Historical Review

The idea that occupation is therapeutic and beneficial to the sick is by no means a new one. As long ago as A.D. 172 Galen wrote "Employment is nature's best physician." In 1798 Dr. Rush, of Philadelphia, prescribed "spinning, sewing, and churning" for his women patients in a mental hospital in Philadelphia; "grinding corn, gardening, and cutting corn" for the men. Again, about 1815 we find the therapeutic value of occupation in a mental hospital being discussed in a correspondence between a physician of the York Retreat and one of the founders of a hospital for the insane in New York. In it we hear that one of the leading features of the new hospital is to be the introduction of employment for the patients; and that in a hospital in Spain which received patients of all ranks the proportion of recoveries among the lower classes, who were employed in the work of the hospital, was much greater than that among the idle grandees. But up to the time of the Great War, in most hospitals little was found in the way of occupation apart from the hospital industries. Successful work was being done here and there by a few individuals who were attempting not simply to occupy and amuse patients, but to treat them through occupation, and it was their success with isolated cases that led the authorities in various hospitals to consider the training of workers definitely for this purpose, for it was seen that if the full possibilities of the work were to be realised the workers must have some definite training. First, they must have in the case of workers with orthopædic and surgical cases a knowledge of anatomy, in the case of workers with mental patients a knowledge of psychology and mental diseases; secondly, they must have a practical knowledge of suitable handicrafts; and thirdly, they must understand how to apply those handicrafts to meet the need of each individual patient.

The first school of occupational therapy was founded in Chicago and was the only one up to the time of the war, when far more trained workers were demanded from it than it could supply. After the war, in 1920, the American Association of Occupational Therapists fixed a standard of training and stated the minimum requirements. These now include:—

1. A certain standard of intelligence and education for admission to the course.
2. A minimum course of 12 months of which not less than eight shall be spent in practical instruction in handicrafts and lectures.
3. Not less than six months (in some schools it is nine) of practical training in a hospital under a trained occupational therapist.

Each student thus, before commencing work independently, acquires a thorough training in theory and technique, and has had some months' actual experience, during which she has had the opportunity of working under an experienced person and of observing all the little details which will add to the value of her class.

In the arrangement of her room she will learn to use separate small tables for patients who tend to be more interested in other people's work than their own and irritate and interfere with others (manias), or for certain melancholias who like to recount all their troubles to their friends—though certain patients are stimulated by their neighbours. She will observe that confused patients who cannot concentrate sufficiently to understand verbal instruction may sometimes be taught to do simple things by guiding their hands—that the dull, mechanical work, cutting wool, stitching braid, &c., which is necessary to provide the department with materials, but which would fail to arouse any interest in the majority of patients, can be satisfactorily done by the senile dementias, and many other details.

Finance

Apart from the salaries of the occupational therapists it is possible for an occupational therapy department to be self-supporting. Whether it is or not depends to a very great extent on the care and ingenuity of the occupational therapist. A certain quantity of new material and tools are essential, but an enormous amount may be done with the discarded and waste articles from other departments of the hospital.

Old clothes may be cut up and used for many purposes, condemned linen, sugar sacks, and old stockings dyed and cut up or unravelled provide material for rugs, weaving, and embroidery; old jam pots may be used for painting, tins for enamelling, &c. All these provide material for useful and saleable articles, and are but a few of the things which may be put to a good use that would otherwise be thrown away.

For the disposal of finished articles in some hospitals there is a permanent exhibition of completed work and patients, visitors, and staff may buy things whenever they wish. Other hospitals hold an annual sale for the public and allow staff and patients to purchase things throughout the year. It is, of course, up to the occupational therapist to see that useful and attractive things are produced in the department, partly because they will be more easily sold, but still more because the patients themselves will be more interested in making such things than in producing useless articles. It must, however, be clearly understood throughout the department that the commercial side must always be subsidiary to the therapeutic; that the purpose of the department is to heal the patient and never to make money; that if no article were sold the value of the work done would still be just the same, and no patient should ever be put to or kept at work which is not the most helpful to him or her simply to produce saleable goods.

In hospitals, where it is possible to employ a sufficient number of occupational therapists to organise the work on a large scale and attempt to occupy the majority of patients in the wards, the occupational therapist may replace a nurse for long periods each day; this, of course, is not possible where only small classes consisting of a few patients from a ward can be held. It must be remembered, however, that if through treatment in the occupational therapy department the length of a patient's stay in the hospital is diminished, this in itself results in a considerable saving in public expense.

Recreation

In some hospitals the occupational therapy department undertakes also the organisation of recreation and amusement. Recreation officers are attached to the department and regular programmes are followed which provide daily exercise, in the form of gymnastics, gardening, organised games, swimming, walks; and amusement in the form of concerts, singing classes, music, wireless, cinemas, dances, socials, for all patients. In other hospitals recreation and amusement are arranged independently. All are equally important and play their part in helping the patient to readjust to normal life. Many patients, who in the ward are difficult to manage, mischievous, impulsive, restless, and unable to settle to anything, will give no trouble whatever in a gymnastic or Morris dancing class, but will coöperate and work well. This helps them to redevelop their power of self-control and concentration. On more than one occasion patients who have remained dull, apathetic, and impossible to stimulate, have first shown signs of returning interest in external things during the Christmas parties which are held in all hospitals—this occurred on one occasion in the case of a stuporose dementia præcox who had remained two years in bed, *requiring every attention*, including washing and feeding.

Music, too, has an influence on many patients and may create a change of mood. Hostile patients may become friendly, and solitary pa [illegible] under its influence. It is not, howe [illegible] nd on one occasion an improving [illegible] o two or three gramophone records became acutely agitated and relapsed into *a state of extreme depression*, while another patient recovering from an acute hallucinosis on first hearing some singing on the wireless, screamed "Oh, those awful voices again," and relapsed into a state of acute agitation. But these cases are exceptional.

The need that is felt for occupation and self-expression in some form by most individuals is illustrated if one walks through the wards of a mental hospital in which no form of occupation is provided. Patients are to be seen attempting to provide it for themselves, some may be seen knitting on hairpins, unravelled stockings being used for wool; odd things being made with ingenious tools they have created for themselves, sometimes beautiful embroidery is being done on old scraps of material. Some time ago an exhibition was held at a mental hospital in the United States of this kind of work done by patients in the hospital. Some of the exhibits had been created simply for the pleasure of producing something beautiful or useful; others, however, were of greater interest, for example, several complicated wood and metal machines one of which, the patient who made it claimed, controlled all the deliberations of the League of Nations, while another was said to regulate the movements of the universe and to direct the stars in their courses. The examination of this unguided occupation shows that what might be useful labour is being wasted, beautiful work often being done on worthless material; that great ingenuity is being used to no purpose, and in addition to this the work is often carrying the patient further into the world of phantasy and strengthening and emphasising delusions.

The occupation of the sick is still regarded by many as a diversion or amusement which will "take the man out of himself" for a short period and thus temporarily relieve his trouble, and this was no doubt the original purpose of those who attempted to employ their patients and it still serves this undoubtedly important purpose, but experience has shown those who have used it that it may be made to serve many other purposes and may, if prescribed and applied scientifically, prove a valuable form of therapy instead of an amusement which may or may not benefit the patient. It must be always remembered that occupational therapy is only a part of general therapy. It does not cure, nor does it claim to do so, but it does assist and hasten cure.

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A CHILD GUIDANCE CONFERENCE

THE staffs of all the clinics in Great Britain organised on child guidance lines met in conference on Jan. 7th–8th in London, with Dr. William Moodie as president. After the first two sessions, the psychiatrists, psychologists, and social workers met separately under the chairmanship of Dr. Emanuel Miller, Dr. Lucie Fildes, and Miss Doris Robinson, respectively, who reported to a final meeting upon the general findings of the three sections.

The psychiatrists discussed the status of the social worker in relation to the psychiatrist and the families being investigated. While the social worker was trained to take a detached view of the field she was investigating, there was some danger, it was felt, of her establishing such emotional relationships with the family that the work of the psychiatrist might thereby be handicapped. While the value of the unity of psychiatrist, social worker, and psychologist was recognised, it was felt that a clinic was most successful where the physician maintained his authority in directing the social worker; in making suggestions as to approach; and deciding at case conferences where the future treatment of the child should lie—that is, in the psychiatric, the social, or the psychological field. The open case conference on a half-developed case was apt to misrepresent to casual visitors the work of child guidance. The investigation of play, both group and individual, was regarded as of first importance for diagnosis and cure in any clinic. Much could be gleaned of a child's social behaviour, intelligence, and emotional reactions from these observations, but it was premature to base their interpretation on current theories. The value of personality tests was considered, particularly the use of the Rohrschach tests; it was felt that discoveries could often be made on purely clinical lines without the use of time-devouring tests.

The social workers' group discussed means of organising their work under methods of treatment varying according to the views of the psychiatrist with whom they work. In small clinics where medical staff is part-time only, much responsibility for adjustment falls upon the social worker. Emphasis was laid on the need, when treating behaviour problems, of knowing working-class living conditions and standards, and of basing plans upon the real possibilities for adjustment.

In the psychological section discussion on clinical diagnosis and treatment developed the following points. Individual free play is recognised as a method of observation and as of probable therapeutic value: in certain selected cases more organised social and constructive play activity may be a profitable line of treatment. Control groups are necessary for the provision of data bearing on the value of treatment; though difficult, this method of evaluation is not impossible. The most hopeful line of growth of personality tests appears to be in the discovery of group factors underlying certain types of behaviour. While work in these directions has already given profitable results, much more experiment is needed before they can be used clinically.

The conference was held at the Institute of Medical Psychology under the auspices of the Child Guidance Council of Great Britain.

NURSING HOMES

Two small books recently issued provide between them probably as much information about nursing homes in this country as can be made available without infringing laws, written and unwritten. What a doctor really wants to know about a home is whether the accommodation and food is good for the price charged; whether the amount of actual nursing provided, and personal attention, day and night without extra charge for a "special," is at least up to the somewhat low standard customary in such institutions; whether there is a lift; whether the patient's bell is answered promptly; whether trained nurses only are employed; and many other things of this kind. This information is, however, unobtainable, except through personal experience; incidentally, a record of impressions of any particular home mentioned would soon make a directory of names and addresses a very useful document to its owner and his patients. Nursing Homes, 1933,[1] provides a list of registered nursing homes in England and Wales, Scotland, and Ireland, arranged according to counties and towns, with full address and telephone number, and a note whether medical, surgical, maternity, or only convalescent cases are accepted. Where, as sometimes occurs, more particulars are available among the advertisement pages, a reference to the appropriate page is also given; but even there the weekly terms are not always stated. London nursing homes are classified under postal districts. The book also contains a short list of mental homes, no indication being given whether certified or uncertified, or both types of cases are accepted. In the advertisement pages are set out trained nurses' institutes, hotels, and guest houses, a scholastic and nursery home section, and a physiotherapy section, as well as nursing and mental homes.

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[1] Edited by J. Eaton Hosking. London: Ernest Benn, Ltd., 1933. Pp. 257. 4s.

The London Register of Nursing Homes and Medical Institutions, 1932–1933,[2] contains much useful information with regard to a limited area. Nursing coöperations and institutes are detailed, and lists of nursing homes are classified, perhaps redundantly, according to metropolitan boroughs, alphabetically, and also according to postal districts. The number of beds and terms per week are stated in most cases, as well as telephone numbers and type of cases admitted. The massage section contains "some members of the London branch (of the Chartered Society of Massage and Medical Gymnasts) in general practice." The up-to-date account of the accommodation available for paying patients in general and special London voluntary hospitals will be found useful, and also the lists of days and hours of attendance for out-patients in these hospitals. We could have spared the two pages devoted to "Therapeutic Suggestion," and would have welcomed, in both directories, a list of visiting nurses for private patients, or at least an asterisk indicating which nursing coöperations and institutes were prepared to supply these on demand.

HISTORY OF THE SAMARITAN FREE HOSPITAL

Dr. Oxford has been a member of the committee of the Samaritan Hospital for nearly half a century, and his vivid interest in its affairs has led to the collection of its annals.[3] These take the form of a brief annual chronicle from its foundation in 1847 in Gray-street, Manchester-square, as "The Gynepathic Institute Free Hospital," to 1930, and a very curious chronicle it makes. Many of the early years of the hospital's existence were marked by constant squabbles among the staff, medical and lay, and by wars of letters and pamphlets, ending in litigation and in the imprisonment of the chairman of the committee for unpaid costs. There were difficulties with secretaries, dispensers, and collectors; the first president, Lord Ashley, afterwards the philanthropic Earl of Shaftesbury, resigned; a subsequent one, Lord Cardigan, was summarily deposed on the grounds that he did not pay his subscription, failed to answer letters, and took no interest in the hospital. Here and there we get a touch of comic relief. The Rev. Robert Montgomery, the poet, who is now chiefly remembered as the subject of a scathing article by Macaulay, consented to preach on behalf of the institution on condition that the committee bought 100 copies (at 3*s.* 6*d.*) of his book on Luther, and offered to do it *again on the same terms*; collectors were paid a penny for every person who refused to give them a donation. A matron ordered grapes and asparagus for her own table and charged them in the bills as cabbages, and eventually committed the fatal mistake of being found on a racecourse by the president when she was supposed to be on duty. This, needless to say, was as long ago as 1883. Meanwhile the hospital had been gaining a high reputation for Spencer Wells's ovariotomy operations, his first successful one having been performed in 1858. The diet-table of patients recovering from this operation is a marvellous document. For the first few days they had beef-tea, arrowroot, and brandy "every five or ten minutes"; about the eighth day their diet was enriched by the addition of fish, light pudding, port or champagne. At the end of a fortnight they absorbed sustenances 11 times between 6 in the morning and 8 at night. After breakfast and before the 12 o'clock dinner they were thrice given wine and biscuits, and once bread and meat, with wine or beer. Brandy and soda accompanied dinner, and after tea there was a "pick-me-up," also of brandy and soda. At 8 o'clock in the evening the patient was comforted with "sandwiches and bitter beer," and hunger during the night was guarded against by a supply of "sandwiches, beef-tea, wine and brandy." The appendix, having been written in 1925, is, as the author admits, now out of date, and might with advantage have been either revised or omitted.

Vacancies

For further information refer to the advertisement columns

Banbury, Oxon, Horton General Hospital.—Res. M.O. At rate of £150.
Birmingham, Selly Oak Hospital.—Cas. O. At rate of £200.
Blackburn Royal Infirmary.—Res. H.P. and Fourth H.S. £175 and £150 respectively.
Bradford Royal Eye and Ear Hospital.—Jun. H.S. £150.
Bradford Royal Infirmary.—Three H.S.'s. Each at rate of £135.
Bristol Royal Infirmary.—H.P.'s and H.S.'s to Special Depts. Each at rate of £60.
Bristol, Southmead Hospital.—Res. Obstetric Officer. At rate of £200.
Bury Infirmary, Lancs.—Sen. H.S. At rate of £200.
Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—Third Res. H.S. At rate of £75.
Charing Cross Hospital, W.C.—Asst. Surgeon. Also Res. M.O. £350.
Cheltenham General and Eye Hospitals.—H.P. £200.
Denbigh, North Wales Sanatorium, Llangwfan.—Jun. Asst. Res. M.O. £250.
Derbyshire Education Committee.—Asst. School M.O. £500.
Dudley, Guest Hospital.—Asst. H.S. £170.
Durham County Mental Hospital.—Med. Supt. for Winterton Mental Hospital, Stockton-on-Tees. £900.
Eastbourne, Princess Alice Memorial Hospital.—H.S. At rate of £150.
East Ham Memorial Hospital, Shrewsbury-road, E.—Hon. Surg. to Ear, Nose and Throat Dept., Res. M.O. At rate of £200, and Refraction Asst. £65.
Evelina Hospital for Sick Children, Southwark, S.E.—H.P. At rate of £120.
Exeter, Royal Devon and Exeter Hospital.—H.S. At rate of £150.
Glasgow Royal I [illegible]
Halifax, St. Lu [illegible] sician.
Hampstead Gene [illegible] *Haverstock-hill, N.W.*—H.P. At rate of £100.
Hertford County Hospital.—H.P. At rate of £150.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Asst. Physician.
Leeds General Infirmary.—Hon. Ophth. Surgeon.
Lewisham Hospital, High-street, S.E.—H.P. At rate of £80.
Liverpool Royal Children's Hospital.—Two Res. H.P.'s and Two Res. H.S.'s for City Branch, Myrtle-street. Each at rate of £100. Also Res. Med. O. and Res. Surg. O. for Heswall Branch. At rate of £120.
London Hospital, E.—Asst. Physician.
London Lock Hospital, 91, Dean-street, W.—Surg. Reg. £100.
Manchester, Ancoats Hospital.—H.S. At rate of £100.
Manchester Northern Hospital for Women and Children, Park-place, Cheetham Hill-road.—Sen. and Jun. H.S. £130 and £100 respectively.
Margate and District General Hospital.—Res. M.O. £150.
Miller General Hospital, Greenwich-road, S.E.—Hon. Asst. Physician.
Ministry of Health, Whitehall, S.W.—Vacancy. £833.
Newark General Hospital.—Res. H.S. £175.
[illegible] *City and County of.*—Asst. M.O.H. £750.
[illegible] *'ooley Sanatorium, near Hexham.*—Jun [illegible]
Norwich, Norfolk and Norwich Hospital.—Cas. O. and H.S. Also H.S. to Special Depts. Each £120.
Nottingham and Midland Eye Infirmary.—Hon. Asst. Surgeon.
Preston, Lancashire Mental Deficiency Acts Committee.—Asst. M.O. £600.
Putney Hospital, Lower Common, S.W.—Surgeon.
Queen Mary's Hospital for the East End, E.—Surg. and Dental Anæsthetist. 50 gns. and £25 respectively.
Rotherham Hospital.—Cas. H.S. £150.
St. Batholomew's Hospital, E.C.—Asst. Surgeon.
St. John's Hospital, Lewisham, S.E.—Hon. Anæsthetist.
St. Leonards-on-Sea, Buchanan Hospital.—Two Hon. Anæsthetists.
Salford, Hope Hospital, Pendleton.—Asst. Res. M.O. At rate of £250.
Salisbury General Infirmary.—Two H.S.'s and H.P. Each at rate of £150.
Southend-on-Sea General Hospital.—Res. Obstet. House Officer.
Sudan Medical Service.—Two M.O.'s. Each £E720.
Taunton and Somerset Hospital.—H.P. £100.
Walsall Gene [illegible]
West London [illegible] . Phys. for Diseases [illegible]
Westminster [illegible] 1. Asst. to Dental Dept.
The Chief Inspector of Factories announces vacancies for Certifying Fac [illegible] Kent), Reynoldston (Glamorgan), [illegible] (Norfolk), Kilbride (Bute), and [illegible]

AMBULANCE TRAINING OF RAILWAY EMPLOYEES.—The ambulance centre of the London Midland and Scottish Railway is able to report that over 8800 members of the staff have been successful in passing examinations this year. Thirty members of the company's staff and members of the medical profession assisting at L.M.S. centres have been honoured by the St. John Ambulance Association.

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[2] London: H. L. Baynham. 1932. Pp. 91. 2*s.* 6*d.*

[3] [illegible] Free Hospital. By Arnold Whitaker [illegible] Appendix on the London Hospitals [illegible] ge: W. Heffer and Sons. Pp. 96. 3*s.* 6*d.*

ADDRESSES AND ORIGINAL ARTICLES

ANÆSTHESIA FOR EUTOCIA*

By Frederick Roques, M.D., M.Chir. Camb.,
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HOSPITAL; SURGEON TO OUT-PATIENTS, CHELSEA HOSPITAL
FOR WOMEN; GYNÆCOLOGICAL AND OBSTETRIC SURGEON,
ROYAL NORTHERN HOSPITAL

From time immemorial medical men have sought to leviate the pains of childbirth either by expediting e delivery of the child, and so curtailing the time uring which pain is felt, or by the administration of dative, hypnotic, anæsthetic, and analgesic drugs. e former method has been in general use since the cret of the Chamberlen family was discovered. The stetric forceps was kept a close secret by four ccessive generations of Chamberlens. More recently tempts have been made to shorten labour by means oxytocic drugs, such as pituitrin and its derivatives. e exhibition of such drugs to women in labour always dangerous and rarely successful, unless e head is on the perineum. I am not referring their use in small doses, and in conjunction with her drugs and with other means, for the induction labour. McIlroy advises against the use of tuitary extract, whatever the conditions are, before e end of the third stage of labour.

During our lifetime the efforts of the profession ave been chiefly directed towards the alleviation the pains by the sedative, anæsthetic, hypnotic, rcotic, and analgesic drugs. In reviewing a few of e methods, of which the number is legion, at our sposal to-day it is worth remembering that the eal one has not yet been discovered. The ideal is, ithout risk to the mother or her future child, to olish pain throughout labour. Since midwives e annually responsible for more than 60 per cent. the confinements in Great Britain it is evident at they will have to be allowed to use the ideal ethod, when it is found, if the pains of labour are be abolished in all women, or in a majority of omen. Fairbairn has pointed out that an Act of arliament would be required before midwives could permitted to administer the anæsthetic drugs, nless ordered to do so by a qualified medical practioner. The ideal method has not yet been disvered. When it is, and I hope not before, a Bill will doubt be presented to Parliament to legalise e administration of anæsthetic drugs by the midwife. ntil then she must, rightly or wrongly, confine erself to the use of such drugs as potassium bromide, loral hydrate, and opium, so far as the alleviation pain is concerned.

We must, therefore, relegate the ideal to the ture and discuss the practical methods at our isposal. Under the existing conditions of obstetric actice it is necessary that the method of alleviating ain shall, most importantly, neither alter the normal echanism of labour nor in any way increase the risk the mother or child; it must minimise pain roughout labour, so far as is possible under existing nditions: and it must not be unduly costly to e patient. The first of these desiderata is axiomatic. e second is demanded by the patient and the ird by both the poor patient and the grossly underid medical practitioner.

Although the ideal of a completely painless safe bour cannot be guaranteed to the patient, we can, by the skilful and judicious use of drugs, diminish her sufferings and, without danger to her or her future child, save her some of the agony endured by the mothers of former generations. Maybe the laity has had some effect in directing the attention of the profession in general, and of the obstetric specialty in particular, to the fear and loathing with which modern woman, not surprisingly, regards the pains of labour. Certainly the laity has, through the agency of funds collected by Mrs. Baldwin, Lady Balfour of Burleigh, and others, made it possible for the poor woman, if she chooses to be confined in a hospital which has accepted a grant from the committee, to be relieved of pain in a similar way to the rich. The popular agitation, like all popular movements, is not without reason; but, like all popular movements, it is unreasoned. Our patients are asking for something which it is not in our power to give.

Our duty is, surely, to avoid rashness and excess in either direction, neither promising a painless confinement on the one hand, nor condemning the patient to the tortures of the damned on the other. The former is unsafe and the latter unnecessary. The drug, or drugs, employed should be chosen to meet the requirements of the case, within the limits of safety. The routine use of one method, or one drug, shows a lack of knowledge and may cause the death of the mother or child. Besides, it spells mediocrity. It would be absurd to allow a highly neurotic woman to pass unrelieved through a prolonged first stage because this or that form of anæsthesia is to be used in the second. It would be ridiculous to produce amnesia during an almost painless, or short, first stage in a mentally well-balanced or plethoric individual. The method chosen must be the most suitable one for the patient.

The Sedative Drugs

The sedative drugs commonly employed in obstetric practice are four in number: potassium bromide, chloral hydrate, morphia, and hyoscine. They act on the brain, and the object in administering them is to secure rest, by abolishing the sensation of pain for a woman who is worn out by the undue prolongation of labour or by short, useless pains, and by soothing a hypersensitive, neurotic, or mentally unstable woman. Their exhibition is most frequently indicated during the first stage of labour in cases of disordered uterine action due to anomalies of the forces, and in cases in which labour is delayed from mechanical causes. The anomalies of the forces are sluggish uterus, exhausted uterus, spasmodic rigidity of the cervix and reflex nervous inhibition of the uterus; the mechanical causes are disproportion and malpresentation. Two or more of these abnormalities are frequently present at the same time in the cases which commonly cause great anxiety. The woman with a minor degree of pelvic contraction, whose child presents with the occiput posterior, whose membranes rupture early, whose uterus is sluggish and cervix slow to dilate, is well known as one of our most difficult problems, which is made more difficult by the relatives when the woman is being confined in her home. In such cases one of the sedative drugs, or a combination of the sedative drugs, is indicated.

POTASSIUM BROMIDE AND CHLORAL HYDRATE

Given in a mixture containing grs. 15 to 20 of each, potassium bromide and chloral hydrate have stood the test of time and they are safe. The mixture is made more effective by the addition of tincture of opium or by giving large doses of chloral hydrate, as practised by Eardley Holland. When given without morphia or opium, these drugs are frequently without effect, although they are occasionally useful as a placebo to the patient and her relatives.

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* A lecture to post-graduates at the Middlesex Hospital.

MORPHIA

Morphia, or its parent, opium, is the most useful of the sedative drugs. Fairbairn has extolled its use. Its benefit is twofold. The central analgesic action is well known, while Bourne and Burn have shown that it has a local action, which is probably produced centrally, upon the uterine contractions, which are lessened in frequency, but increased in duration, after its hypodermic injection. A large number of short contractions is replaced by a smaller number of long ones; the former are of much less use than the latter in dilating the cervix. Moreover, this effect is produced without increasing the pain felt by the patient during each contraction; indeed, the pain caused by the long, slow contractions induced by morphia is, owing to the analgesic action of the drug, less than that caused by the previous short contractions.

The best results are obtained when it is given early. Fairbairn says that it should be given to the patient "when she is tiring, and before she is tired." It should always be given early in cases in which an unduly long labour is anticipated, on account of disproportion or malpresentation; when the patient is unduly nervous, hypersensitive, fearful or neurotic; and when the patient, often highly strung and nearly always fearful, is rapidly tired by short, ineffectual contractions. The first injection, of gr. $\frac{1}{6}$ to $\frac{1}{3}$, should be given as soon as the patient exhibits the signs of mental fatigue. It is often nnecessary to give a second dose.

hen the patient is unusually hypersensitive apprehensive it may be advisable to combine hia with hyoscine, although morphia alone is n efficacious. It should always be given to tients who are first seen after labour has been in rogress for many hours, before attempts at artificial delivery are made, unless the obstetric contraindication to its administration is present. In many cases, if not in most cases, spontaneous delivery occurs after the rest induced by an adequate injection of morphia.

The inestimable value of morphia in cases of eclampsia is well known. It is almost unnecessary to say that morphia, on account of its narcotic effect upon the respiratory centre of the child, should never be exhibited to a patient when her delivery is expected to occur within three hours, or a lesser period of time.

MORPHIA AND HYOSCINE

The literature on the combined use of morphia and hyoscine during labour is very extensive and exhaustive, if not exhausting. A continuous series of papers has appeared on the subject, from Steinbückel's paper, published in 1902, on "A method of inducing amnesia during labour by the hypodermic injection of scopolamine hydrobromate and morphine," until the publication of Claye's papers, in 1931 and 1932, in which he describes his method of using hyoscine hydrobromide. The most illuminating reviews on the subject are those of Lequeux, Siegel, and the committee of the obstetric section of the Royal Society of Medicine. The gravest disadvantage of this method is an undoubted suppression of the normal uterine function which results in a prolongation of labour and an increased incidence of forceps delivery; amnesia can be guaranteed only in three quarters of the cases. In spite of this it cannot be denied that the method possesses certain advantages; it is the treatment of election for reflex nervous inhibition of the uterus. But it is unsuitable for ordinary domiciliary midwifery; first, because it depends for its success upon the fulfilment of conditions which cannot be realised unless the patient is under the constant care of a specially trained personnel; secondly, because the relatives and friends of the patient become alarmed at her restlessness and excitement, which occur in many of the cases; and thirdly, because of the demand made upon the time of the obstetrician, who must be in almost continuous attendance throughout the labour, which usually lasts for 24 hours or more.

The Anæsthetic Drugs

There is universal agreement among practitioners that the acute pain which is experienced by the parturient woman towards the end of the second stage of labour should be relieved by one of the anæsthetic drugs, used as analgesics. Chloroform is, justly, the most popular; ether and a mixture of chloroform and ether are the alternatives.

Unfortunately the uterine contractions are diminished in strength and frequency by the inhalation of either of these anæsthetics. Dönhoff, Hensen, and Bourne and Burn have proved this beyond all doubt; clinical experience in the labour ward confirms their observations. Practically, however, the diminution in the strength of the contractions is not so great as seriously to delay delivery in the large majority of cases, provided the patient is only lightly anæsthetised.

Either chloroform or ether or a combination of chloroform and ether can, in small doses, be administered with safety towards the end of labour. Most obstetricians prefer chloroform to ether, although the reasons for this preference are seldom stated in text-books and papers on the subject. I think that chloroform is the more generally useful, for: (1) it is easier to induce analgesia with chloroform than with ether because the former acts more rapidly than the latter, particularly if the midwife is administering the anæsthetic under the direction of the practitioner; (2) analgesia can more rapidly and more surely be converted into anæsthesia at the appropriate time, by chloroform than by ether; (3) ether causes an excessive and troublesome secretion of mucus in the trachea and bronchi; and (4) vomiting, as Charles has observed, is usually more pronounced after ether than after chloroform.

The administration of chloroform, ether or a combination of the two should not be begun until the head can be felt through the perineum, and the chosen drug, or chosen mixture, should only be given to the woman during the pains until the head is imminently to be born, when surgical anæsthesia is required. Between the pains the mask should be removed from the woman's face, to be reapplied when she begins to feel the next pain. The time at which analgesia is induced is of the utmost importance. Chloroform and ether admittedly interfere with the normal mechanism of parturition. Their too early exhibition may result in delivery by the forceps, which could have been avoided, while undue procrastination in their exhibition may mar their effect. Experience dictates the best time to begin the administration of these drugs in an individual case; but, when there is a doubt, it is safer to wait. It is difficult, if not impossible, t continue analgesia, the patient quite naturally enting its cessation.

The danger of prolonged and deep chloroform æsthesia is well known. The production of algesia, by the discontinuous administration of the ug, requires from two to four drachms of chloroform. e quantity used should always be approximately imated and more than six drachms of chloroform ould not be given. When surgical anæsthesia is quired for the obstetric operations, including the plication of the forceps, either ether or a mixture chloroform and ether should be used.

CHLOROFORM

Chloroform may be administered on a mask by e midwife, acting on the instruction of the stetrician, or by an anæsthetist, acting in collabora-on with the obstetrician. Or it may be given by nker's inhaler worked by the patient herself. e have used Junker's inhaler for more than ten years the labour ward at Middlesex Hospital, and the tients have been satisfied. It is the safest of all æsthetics; for, so soon as the patient's volition eparts, she cannot obtain any more anæsthetic.

It may be given by the obstetrician or by the idwife, acting on the obstetrician's orders, in mpoules. This method has been tried, and is being ied, at Middlesex Hospital and at Queen Charlotte's Hospital. Rivett strongly advocates it, affirming that could be safely given by a midwife on her own itiative. Each ampoule contains 20 minims of hloroform. An ampoule is broken by the midwife n to a mask of lint and applied to the face of the atient when the head begins to show. A second mpoule is broken when the effect of the first begins o wear off, usually after one to three pains. About x to ten ampoules are used in an ordinary case. he midwife should be instructed not to give more han one ampoule during five minutes. This method ould probably be the safest and most convenient ethod for midwives to use if they were allowed to ive chloroform in cases in which they are not acting nder medical instructions.

Chloroform, of all the drugs used for the assuaging he pains of labour, is the most satisfactory under the revalent conditions of ordinary domiciliary mid-ifery, but again I insist that a limit must be set pon the quantity used, and the degree of anæsthesia ust be shallow.

USES OF ETHER

Ether or *a mixture of chloroform and ether* can be iven on a mask in the same way as chloroform, with inor differences—such as the thickness of the aterial of the mask—in technique. My preference s for chloroform, unless deep anæsthesia is required.

Ether and magnesium sulphate.—Another method f giving ether was introduced by Gwathmey in 1924. e has used it in more than 20,000 cases. It depends pon the induction of hypnosis, with subsequent mnesia, by the administration of drugs whose actions re complementary. The treatment is begun when he cervix is completely taken up and the uterine ontractions are good.

After an enema saponis at the beginning of treatment subcutaneous injection of gr. ¼ of morphine sulphate nd 2 c.cm. of a 50 per cent. solution of magnesium sulphate s given. After an interval of 20 minutes the magnesium ulphate is repeated without morphia. The morphia is iven for its sedative action, which is prolonged and increased y the concomitant and succeeding injections of magnesium ulphate.

When the sedative action begins to wear off, an alcoholic nd oily solution of ether and quinine is given by the rectum. he formula for this solution is: quinine alkaloid, grs. xx.; lcohol, ♏ xl.; ether, ℥ iiss.; olive oil, ad. ℥ iv. Immediately after the enema a third injection of 2 c.cm. of magnesium sulphate is given. Thereafter the patients sleep between the pains for a period of two to four hours, when complete consciousness begins to return. Another enema, containing grs. 10 of quinine, is then given. If necessary, a third enema containing grs. 10 of quinine is given. The depressant effect exerted by the morphia and ether on the uterine contractions is thought to be counteracted by the simultaneous exhibition of quinine.

Gwathmey, Davis and Harrar, and the other protagonists of this method claim success in 85 to 97 per cent. of the cases without danger to the mother or child. Labour, they say, is not prolonged, the forceps rate is not increased, and post-partum hæmorrhage is lessened. The method has been conspicuously unsuccessful in the few cases in which we have tried it at Middlesex Hospital. The method possesses the disadvantage of a somewhat complicated technique which necessarily entails frequent and repeated visits by the practitioner. For this reason it is unsuitable in private practice, while in hospitals it is difficult to secure the isolation and quietude which are essential to its success. It has been alleged that proctitis sometimes occurs, although this is denied by all authors with a wide experience.

NITROUS OXIDE AND OXYGEN

I have no hesitation in affirming that the best method of relieving the pains, without sacrificing eutocia, when repeated and prolonged attendance by the obstetrician is possible, when the services of more than one nurse are available if required, and when an anæsthetist, as well as an obstetrician, is in attendance, is by gas-and-oxygen. It is well known that this anæsthetic never affects the uterine contractions; it can be given for a long period without the risk of harming the mother or the child; it is a certain means of producing anæsthesia; the degree of anæsthesia can be rapidly altered, when necessary; and it does not have any unpleasant after-effects. We have given gas-and-oxygen, by Boyle's apparatus, with uniformly successful results in the labour ward of the Middlesex Hospital.

It is not usually necessary to begin the administration of gas-and-oxygen until the end of the first stage of labour, although it is not contra-indicated earlier. Lynch, who in 1915 was responsible for the introduction of this method of anæsthesia into obstetric practice, favours its commencement early in the first stage. A timely injection of morphia, or of morphia and scopolamine, during the first stage makes the use of gas-and-oxygen unnecessary before the cervix is fully dilated. The mask is applied to the patient's face at the onset of each contraction and removed between the contractions. During the delivery of the head the anæsthesia should be deepened by the addition of ether. The woman must never be allowed to become cyanosed. If she is, the baby will probably be born with blue asphyxia. A high degree of skill is necessary consistently to avoid cyanosis.

Although pre-eminently safe and sure, nitrous oxide and oxygen require for their proper administration the services of one highly skilled in their use; they are expensive, and the apparatus is heavy and cumbersome. The resulting cost of the method restricts its use to hospitals and patients of affluence.

The Hypnotic Drugs

During the past decade various derivatives of barbitonum have been introduced. The best known are avertin, sodium amytal, nembutal, and pernocton. Extravagant claims have been made for each of these drugs; but their number and the numerous methods is made more effective by the addition of tincture of opium or by giving large doses of chloral hydrate, as practised by Eardley Holland. When given without morphia or opium, these drugs are frequently without effect, although they are occasionally useful as a placebo to the patient and her relatives.

MORPHIA

Morphia, or its parent, opium, is the most useful of the sedative drugs. Fairbairn has extolled its use. Its benefit is twofold. The central analgesic action is well known, while Bourne and Burn have shown that it has a local action, which is probably produced centrally, upon the uterine contractions, which are lessened in frequency, but increased in duration, after its hypodermic injection. A large number of short contractions is replaced by a smaller number of long ones; the former are of much less use than the latter in dilating the cervix. Moreover, this effect is produced without increasing the pain felt by the patient during each contraction; indeed, the pain caused by the long, slow contractions induced by morphia is, owing to the analgesic action of the drug, less than that caused by the previous short contractions.

The best results are obtained when it is given early. Fairbairn says that it should be given to the patient "when she is tiring, and before she is tired." It should always be given early in cases in which an unduly long labour is anticipated, on account of disproportion or malpresentation; when the patient is unduly nervous, hypersensitive, fearful or neurotic; and when the patient, often highly strung and nearly always fearful, is rapidly tired by short, ineffectual contractions. The first injection, of gr. $\frac{1}{6}$ to $\frac{1}{3}$, should be given as soon as the patient exhibits the signs of mental fatigue. It is often unnecessary to give a second dose.

When the patient is unusually hypersensitive and apprehensive it may be advisable to combine morphia with hyoscine, although morphia alone is often efficacious. It should always be given to patients who are first seen after labour has been in progress for many hours, before attempts at artificial delivery are made, unless the obstetric contra-indication to its administration is present. In many cases, if not in most cases, spontaneous delivery occurs after the rest induced by an adequate injection of morphia.

The inestimable value of morphia in cases of eclampsia is well known. It is almost unnecessary to say that morphia, on account of its narcotic effect upon the respiratory centre of the child, should never be exhibited to a patient when her delivery is expected to occur within three hours, or a lesser period of time.

MORPHIA AND HYOSCINE

The literature on the combined use of morphia and hyoscine during labour is very extensive and exhaustive, if not exhausting. A continuous series of papers has appeared on the subject, from Steinbückel's paper, published in 1902, on "A method of inducing amnesia during labour by the hypodermic injection of scopolamine hydrobromate and morphine," until the publication of Claye's papers, in 1931 and 1932, in which he describes his method of using hyoscine hydrobromide. The most illuminating reviews on the subject are those of Lequeux, Siegel, and the committee of the obstetric section of the Royal Society of Medicine. The gravest disadvantage of this method is an undoubted suppression of the normal uterine function which results in a prolongation of labour and an increased incidence of forceps delivery; amnesia can be guaranteed only in three-quarters of the cases. In spite of this it cannot be denied that the method possesses certain advantages; it is the treatment of election for reflex nervous inhibition of the uterus. But it is unsuitable for ordinary domiciliary midwifery; first, because it depends for its success upon the fulfilment of conditions which cannot be realised unless the patient is under the constant care of a specially trained personnel; secondly, because the relatives and friends of the patient become alarmed at her restlessness and excitement, which occur in many of the cases; and thirdly, because of the demand made upon the time of the obstetrician, who must be in almost continuous attendance throughout the labour, which usually lasts for 24 hours or more.

The Anæsthetic Drugs

There is universal agreement among practitioners that the acute pain which is experienced by the parturient woman towards the end of the second stage of labour should be relieved by one of the anæsthetic drugs, used as analgesics. Chloroform is, justly, the most popular; ether and a mixture of chloroform and ether are the alternatives.

Unfortunately the uterine contractions are diminished in strength and frequency by the inhalation of either of these anæsthetics. Dönhoff, Hensen, and Bourne and Burn have proved this beyond all doubt; clinical experience in the labour ward confirms their observations. Practically, however, the diminution in the strength of the contractions is not so great as seriously to delay delivery in the large majority of cases, provided the patient is only lightly anæsthetised.

Either chloroform or ether or a combination of chloroform and ether can, in small doses, be administered with safety towards the end of labour. Most obstetricians prefer chloroform to ether, although the reasons for this preference are seldom stated in text-books and papers on the subject. I think that chloroform is the more generally useful, for: (1) it is easier to induce analgesia with chloroform than with ether because the former acts more rapidly than the latter, particularly if the midwife is administering the anæsthetic under the direction of the practitioner; (2) analgesia can more rapidly and more surely be converted into anæsthesia, at the appropriate time, by chloroform than by ether; (3) ether causes an excessive and troublesome secretion of mucus in the trachea and bronchi; and (4) vomiting, as Charles has observed, is usually more pronounced after ether than after chloroform.

The administration of chloroform, ether or a combination of the two should not be begun until the head can be felt through the perineum, and the chosen drug, or chosen mixture, should only be given to the woman during the pains until the head is imminently to be born, when surgical anæsthesia is required. Between the pains the mask should be removed from the woman's face, to be reapplied when she begins to feel the next pain. The time at which analgesia is induced is of the utmost importance. Chloroform and ether admittedly interfere with the normal mechanism of parturition. Their too early exhibition may result in delivery by the forceps, which could have been avoided, while undue procrastination in their exhibition may mar their effect. Experience dictates the best time to begin the administration of these drugs in an individual case; but, when there is a doubt, it is safer to wait. It is difficult, if not impossible, to ontinue analgesia, the patient quite naturally enting its cessation.

The danger of prolonged and deep chloroform esthesia is well known. The production of algesia, by the discontinuous administration of the ug, requires from two to four drachms of chloroform. e quantity used should always be approximately imated and more than six drachms of chloroform ould not be given. When surgical anæsthesia is quired for the obstetric operations, including the plication of the forceps, either ether or a mixture chloroform and ether should be used.

CHLOROFORM

Chloroform may be administered on a mask by e midwife, acting on the instruction of the stetrician, or by an anæsthetist, acting in collaboraon with the obstetrician. Or it may be given by nker's inhaler worked by the patient herself. e have used Junker's inhaler for more than ten years the labour ward at Middlesex Hospital, and the tients have been satisfied. It is the safest of all æsthetics; for, so soon as the patient's volition parts, she cannot obtain any more anæsthetic.

It may be given by the obstetrician or by the idwife, acting on the obstetrician's orders, in npoules. This method has been tried, and is being ied. at Middlesex Hospital and at Queen Charlotte's ospital. Rivett strongly advocates it, affirming that could be safely given by a midwife on her own itiative. Each ampoule contains 20 minims of loroform. An ampoule is broken by the midwife n to a mask of lint and applied to the face of the atient when the head begins to show. A second npoule is broken when the effect of the first begins wear off, usually after one to three pains. About x to ten ampoules are used in an ordinary case. he midwife should be instructed not to give more an one ampoule during five minutes. This method ould probably be the safest and most convenient ethod for midwives to use if they were allowed to ive chloroform in cases in which they are not acting nder medical instructions.

Chloroform, of all the drugs used for the assuaging e pains of labour, is the most satisfactory under the revalent conditions of ordinary domiciliary midifery, but again I insist that a limit must be set pon the quantity used, and the degree of anæsthesia ust be shallow.

USES OF ETHER

Ether or *a mixture of chloroform and ether* can be iven on a mask in the same way as chloroform, with inor differences—such as the thickness of the aterial of the mask—in technique. My preference for chloroform, unless deep anæsthesia is required.

Ether and magnesium sulphate.—Another method f giving ether was introduced by Gwathmey in 1924. le has used it in more than 20,000 cases. It depends pon the induction of hypnosis, with subsequent mnesia, by the administration of drugs whose actions re complementary. The treatment is begun when he cervix is completely taken up and the uterine ontractions are good.

After an enema saponis at the beginning of treatment subcutaneous injection of gr. ¼ of morphine sulphate nd 2 c.cm. of a 50 per cent. solution of magnesium sulphate given. After an interval of 20 minutes the magnesium alphate is repeated without morphia. The morphia is iven for its sedative action, which is prolonged and increased y the concomitant and succeeding injections of magnesium alphate.

When the sedative action begins to wear off, an alcoholic d oily solution of ether and quinine is given by the rectum. formula for this solution is: quinine alkaloid, grs. xx.; cohol, ♏ xl.; ether, ℥ iss.; olive oil, ad. ℥ iv. Immediately after the enema a third injection of 2 c.cm. of magnesium sulphate is given. Thereafter the patients sleep between the pains for a period of two to four hours, when complete consciousness begins to return. Another enema, containing grs. 10 of quinine, is then given. If necessary, a third enema containing grs. 10 of quinine is given. The depressant effect exerted by the morphia and ether on the uterine contractions is thought to be counteracted by the simultaneous exhibition of quinine.

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These disadvantages limit the use of the barbiturates. They should only be used in hospitals, well-conducted nursing-homes, and in private houses in which an adequate number of assistants can be employed. In these circumstances it seems unwise to replace morphia, judiciously exhibited during the first stage of labour, and gas-and-oxygen skilfully administered during the second stage, by hypnotic drugs of uncertain and possibly dangerous action.

NEMBUTAL

Nembutal, sodium-ethyl-methyl-butyl barbiturate, is one of the latest of the barbiturates to be introduced into obstetric practice. This drug undergoes decomposition by hydrolysis if kept in contact with the air. The manufactured product is, therefore, sold in capsules covered with a coat of gelatin; each ampoule contains grs. 1½ of nembutal. O'Sullivan and Craner have described, in a well-balanced and unbiased paper, their method of giving nembutal with chloral hydrate. The chloral hydrate is given in three ounces of freshly prepared lemonade with sugar ten minutes after the capsules containing the nembutal have been swallowed. If the chloral hydrate is given immediately after the nembutal, or if the quantity of fluid in which the chloral hydrate is dissolved is too bulky, the patient vomits. Both drugs are given by the mouth. The first dose, consisting of grs. 3 of nembutal (two capsules) and grs. 30 of chloral hydrate, is given to primiparæ when the cervix is two-fifths to three-fifths dilated and to multiparæ when it is one-fifth to two-fifths dilated, regular uterine contractions being present.

The time of administration of the drugs is impor because the uterine contractions are diminished strength and frequency if they are given too s and they do not have time to act if given too l Failures occurred in cases in which they were gi less than an hour and a half before delivery. T second dose, consisting of the same quantity of t drug, should be given about two hours after the fir subsequent doses should be given at intervals three hours: the total dosage should not exc grs. 7½ of nembutal and grs. 120 of chloral hydra O'Sullivan and Craner are satisfied that their meth is safe and reliable. Indeed, they are of the that nembutal and chloral hydrate could be gi by midwives without danger, if the midwives follow their technique without any variation. Their resu are, undoubtedly, encouraging: labour was painl in 62 per cent. of their cases, varying degrees amnesia were achieved in their other cases, but i 7 per cent. the method failed.

PERNOCTON

Pernocton is the latest derivative of barbitur acid to be introduced into obstetric practice. It composed of a 10 per cent. solution of the sodium sa of secondary butyl-β-bromalbyl barbituric aci Bumm brought pernocton into prominence in and 1927, when he published the results of the ana thetic use of the drug for gynæcological operatio and of his experiments with it on dogs. Bumm research was due to his dissatisfaction with pernocton's barbituric predecessor. He found eviden of renal and hepatic damage in three cases aft using somnifen; he says that that drug produc undue excitement and that the post-operative sle is unduly prolonged. On the other hand he foun that pernocton does not possess these three di advantages. He found that the minimum lethal do of pernocton was ten times greater than the minim effective dose: when it was given to dogs in leth doses death was due to paralysis of the respirato centre. Pernocton produces amnesia by its acti on the brain. It is not split into toxic substanc after its introduction into the body; after i reduction to acetonyl barbituric acid, it underg further reduction into inert substances which are n toxic.

It can be given either intravenously or int muscularly. It must not be given subcutaneousl because the skin sloughs over the site of the injecti

The injection should be made very slowly when t intravenous route is chosen, in order that the concentrati of pernocton in the blood shall not be raised too quickl the overlying skin will slough if any of the solution is inject outside the vein. The injection of an ampoule contain 2·2 c.cm. should not occupy less than two and a half minut It should, therefore, take five minutes to inject the conte of two ampoules. Matters states that the intraven route is the better because it permits the correct rate absorption by the nerve-cells and ensures accurate dosa other authorities agree.

The solution is sold in ampoules containing 2·2 c.c of the 10 per cent. solution. Goldschmidt gives 1 c.c of pernocton for each 12·5 kg. (27·5 lb.) of body-weig Goetz, 1 c.cm. for each 10 kg. (22·2 lb.) of body-weig Matters, 1 c.cm. for each 12 kg. (26·4 lb.) to 15 kg. (33·1 l of body-weight.

A woman weighing 112 lb. (8 st.) would, therefore given 4·3 c.cm. of the solution by Goldschmidt, slig more than 5 c.cm. by Goetz, and from 3·4 to 4·2 c.cm. Matters.

The other authors whose papers I have read are not precise in estimating the correct dose. Hole recomm a dose of 4·4 to 7·5 c.cm., the dose depending on the wei of the patient. Brown, Moloy, and Laird prescribe a d of 4·4 c.cm. as the initial dose for patients of average wei If a second dose is required, they usually give 2·2 c.c but they have frequently given 4·4 c.cm.

hese figures and opinions indicate that, if pernocton sed, the first intravenous injection should consist about 4·4 c.cm., that is a little less or a little more n the contents of two ampoules, when the woman ghs 112 lb. (8 st.).

ach author claims reasonable success with per- ton in the dose he recommends. This dose is, refore, an effective dose, an observation which have been able to confirm at the Middlesex spital in the few cases in which we have used nocton. Bumm found, when experimenting on that the minimal lethal dose was ten times great as the minimal effective dose. It would, refore, appear that 44 c.cm. (more than nine poules) of pernocton would be required to kill a man weighing 8 st. If this is indeed a fact, a t dose of 4·4 c.cm. can safely be given.

he first injection should be made when the pains of our are definitely established, most usefully when the nan is becoming distressed and the degree of cervical tation is small. Brown, Moloy, and Laird give it n the uterine contractions are powerful and recur at rvals of three to five minutes. The patients fall into p sleep during the injection of the drug. They remain ep for 30 minutes to 5 hours, although they may, icularly when the effect of the drug is beginning to wane, in or return to apparent consciousness during the con- tions of the uterus; they do not afterwards remember n happenings.

second injection is indicated when the patient com- ely regains consciousness and delivery is not expected four hours. The second dose should not be greater n half the first; it should be given more slowly than the

roecke and Vogt in Germany, and Bohler in France e been using pernocton for treating eclampsia. gt also advocates its use during labour in pre- mptic patients. They all claim greater success n can be achieved by any other method of treat- nt, including that of Stroganoff. There is general eement among Continental authors who have used nocton in large numbers of cases that it does not m the mother, provided the dosage and the nique of injection are correct. Both the first the second stages of labour are said to be shortened her than lengthened by its use, although the lence of this appears to be based upon general ression, not upon accurate analyses of large series ases.

ts greatest disadvantage is the necessity for tinuous observation of the patient, who should er be left after its exhibition. The restlessness and itement of some of the patients may be difficult to trol. Restlessness of greater or lesser degree rred in 26 per cent. of 100 cases recorded by midt; several of his patients developed incon- nce of urine and fæces while under the influence the drug. These facts prohibit its use outside pitals and nursing-homes, except for wealthy ients. The relatively short and variable duration he anæsthesia is a minor disadvantage. Bourne Williams point out that an antidote, for a case verdosage, is not known. It is generally accepted pernocton does not have an untoward effect he child, although three of the children in Bohler's es of 192 cases were affected.

AVERTIN

uring the year 1926 avertin, or tribrom-ethyl- hol, which had proved satisfactory as a basal sthetic for surgical purposes, began to be used he Continent for the production of hypnosis and lting amnesia during labour. Martin, Benthin, other Continental authors praised it unstintingly; 930 Connell published, in an important paper, first results recorded in the United Kingdom.

The technique of its administration is easy; the details are found in his paper in which he recommends the safe dose of 0·075 c.cm. of avertin fluid per kg. of body-weight, that is, about 4·5 c.cm. for a woman weighing 126 lb. (9 st.). The relative simplicity of the technique and apparatus required for its rectal administration are undeniable advantages. Connell recommends the instillation of avertin when the cervix is two-thirds dilated in primiparæ and half dilated in multiparæ, provided the uterine contractions are strong and antenatal examination has pointed to normal labour. Stander has shown that the administration of 1000 mg. of avertin per kg. of body-weight does not produce any alteration in the amount of non-protein nitrogen, urea nitrogen, uric acid, lactic acid, creatinine, inorganic chlorides and carbon dioxide in the blood; the amount of sugar is slightly increased.

Its greatest disadvantage is the excitement which sometimes follows its exhibition. Both Rumpf, who prefers avertin to pernocton, and Kienlin, who prefers pernocton to avertin, refer to the excited state of many of the patients. I have confirmed this at the Royal Northern Hospital in some of the cases in which I have used avertin. These observations clearly indicate that a patient should not be left after the rectal instillation of the drug and that more than one assistant must be present in order, if necessary, to restrain her. Labour is undoubtedly prolonged and, therefore, the incidence of delivery by the forceps is increased.

Naujok discusses several cases of maternal death following, or during, avertin amnesia. He says that veronal, pantopon, and ethyl chloride should never be given after, with or before avertin. He refers to two cases of transitory exanthema, presumably due to avertin, during the puerperium. He is enthusiastic about the value of avertin in the treatment of eclampsia. Stander is against its use in eclampsia because it is detoxicated in the liver; the function of that organ is thought already to be over-taxed by eclampsia. The children do not appear to be directly harmed by avertin, but prolongation of labour and instrumental delivery cannot be of benefit either to the mother or the child. Each dose of avertin must be freshly prepared because of its rapid decomposition into the irritating and nocuous dibrom-acetaldehyde.

SODIUM AMYTAL

Sodium amytal (iso-amyl-ethyl barbituric acid) has enjoyed some measure of popularity in the United States during the past few years. It can be given orally, intravenously, intramuscularly, or rectally.

Most authors recommend the intravenous route and give from grs. 7 to 10. Ruth and Paxon recommend giving the injection when the contractions of the uterus occur every two to four minutes and last from 45 seconds to one minute, and when the cervix is taken up and about 5 cm. dilated. Featherstone and Tait give the large intravenous dose of grs. 15 shortly before the cervix becomes fully dilated. Drabkin and Hurst report satisfactory results by the rectal route, giving 30 mg. per kg. of body-weight. The uterine contractions were weakened in some of their patients and abolished in two.

Hamblen and Hamblin favour the oral route. They give an initial dose of grs. 6 to 15 as soon as labour is definitely established and the cervix begin to dilate—earlier than most other authors. One or two additional doses are given when necessary, but the total dosage should not exceed grs. 30. They claim that the drug is as efficacious when given by the mouth as when given intravenously; this claim is based upon their belief that the depth of the narcosis depends upon the dose and not upon the method of administration.

The great drawback to the use of sodium amytal is the excitement which so often ensues and is referred recommended by different authors for their administration strongly suggests to me that none of them is absolutely reliable if given in safe doses. Nembutal, given orally with chloral hydrate as recommended by O'Sullivan and Craner, is probably the most satisfactory; sodium amytal appears to be the least desirable. They are all given for their hypnotic effect, in the hope that when consciousness is regained, after the artificially induced sleep, the woman will be amnesic regarding the pains of labour after the induction of hypnosis. The published reports clearly indicate that each of the four drugs is successful in a majority of the cases in which it has been used, but they all possess certain inherent disadvantages. First, the patient may become very excited, even maniacal, while under the influence of any of them. This demands a greater number of attendants than are ordinarily present at a confinement. The excitement appears to be greater with sodium amytal than with any of the other three drugs; but, I must admit, I have never used sodium amytal. My experience of avertin, pernocton, and nembutal is that excitement does sometimes occur; the patients must, therefore, be carefully watched. Secondly, it is impossible accurately to gauge the dose. It may be known that *x* mg. or *y* c.cm. per kg. of body-weight is a safe and effective dose in a majority of cases, but idiosyncrasy is not uncommon. On the one hand, the recommended dose may be without effect, while, on the other hand, it may cause collapse. Thirdly, and in spite of assertions to the contrary, my experience leads me to believe that the barbiturates interfere with the natural course of labour, which is prolonged by their use and has, more frequently than usual, to be terminated by the forceps. Fourthly, the correct treatment of overdosage is not known. Fifthly, and less importantly, one of the anæsthetic drugs is almost always required to supplement the hypnotic drug during delivery.

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NEMBUTAL

Nembutal, sodium-ethyl-methyl-butyl barbiturate, is one of the latest of the barbiturates to be introduced into obstetric practice. This drug undergoes decomposition by hydrolysis if kept in contact with the air. The manufactured product is, therefore, sold in capsules covered with a coat of gelatin; each ampoule contains grs. 1½ of nembutal. O'Sullivan and Craner have described, in a well-balanced and unbiased paper, their method of giving nembutal with chloral hydrate. The chloral hydrate is given in three ounces of freshly prepared lemonade with sugar ten minutes after the capsules containing the nembutal have been swallowed. If the chloral hydrate is given immediately after the nembutal, or if the quantity of fluid in which the chloral hydrate is dissolved is too bulky, the patient vomits. Both drugs are given by the mouth. The first dose, consisting of grs. 3 of nembutal (two capsules) and grs. 30 of chloral hydrate, is given to primiparæ when the cervix is two-fifths to three-fifths dilated and to multiparæ when it is one-fifth to two-fifths dilated, regular uterine contractions being present.

The time of administration of the drugs is impor because the uterine contractions are diminished strength and frequency if they are given too s and they do not have time to act if given too l Failures occurred in cases in which they were gi less than an hour and a half before delivery. T second dose, consisting of the same quantity of t drug, should be given about two hours after the fir subsequent doses should be given at intervals three hours: the total dosage should not exce grs. 7½ of nembutal and grs. 120 of chloral hydra O'Sullivan and Craner are satisfied that their meth is safe and reliable. Indeed, they are of the opin that nembutal and chloral hydrate could be giv by midwives without danger, if the midwives follow their technique without any variation. Their resu are, undoubtedly, encouraging: labour was pain in 62 per cent. of their cases, varying degrees o amnesia were achieved in their other cases, but i 7 per cent. the method failed.

PERNOCTON

Pernocton is the latest derivative of barbitur acid to be introduced into obstetric practice. It i composed of a 10 per cent. solution of the sodium sa of secondary butyl-β-bromalbyl barbituric acid Bumm brought pernocton into prominence in 19 and 1927, when he published the results of the an thetic use of the drug for gynæcological operatio and of his experiments with it on dogs. Bumm research was due to his dissatisfaction with somnife pernocton's barbituric predecessor. He found eviden of renal and hepatic damage in three cases aft using somnifen; he says that that drug produce undue excitement and that the post-operative sle is unduly prolonged. On the other hand he foun that pernocton does not possess these three di advantages. He found that the minimum lethal do of pernocton was ten times greater than the minim effective dose: when it was given to dogs in leth doses death was due to paralysis of the respirator centre. Pernocton produces amnesia by its actio on the brain. It is not split into toxic substance after its introduction into the body; after r reduction to acetonyl barbituric acid, it underg further reduction into inert substances which are n toxic.

It can be given either intravenously or intra muscularly. It must not be given subcutaneou because the skin sloughs over the site of the injecti

The injection should be made very slowly when th intravenous route is chosen, in order that the concentrat of pernocton in the blood shall not be raised too quickly the overlying skin will slough if any of the solution is inject outside the vein. The injection of an ampoule contain 2·2 c.cm. should not occupy less than two and a half minu It should, therefore, take five minutes to inject the cont of two ampoules. Matters states that the intraven route is the better because it permits the correct rate absorption by the nerve-cells and ensures accurate dosag other authorities agree.

The solution is sold in ampoules containing 2·2 c.c of the 10 per cent. solution. Goldschmidt gives 1 c.c of pernocton for each 12·5 kg. (27·5 lb.) of body-weig Goetz, 1 c.cm. for each 10 kg. (22·2 lb.) of body-weig Matters, 1 c.cm. for each 12 kg. (26·4 lb.) to 15 kg. (33 l of body-weight.

A woman weighing 112 lb. (8 st.) would, therefore, given 4·3 c.cm. of the solution by Goldschmidt, sligh more than 5 c.cm. by Goetz, and from 3·4 to 4·2 c.cm. Matters.

The other authors whose papers I have read are no precise in estimating the correct dose. Hole recomm a dose of 4·1 to 7·5 c.cm., the dose depending on the we of the patient. Brown, Moloy, and Laird prescribe a d of 4·1 c.cm. as the initial dose for patients of average we If a second dose is required, they usually give 2·2 c.c but they have frequently given 1·1 c.cm.

ompletely failed. The urine at the onset of an attack howed considerable amounts of acetone and urobilin. he patient was ordered to take glucose ½ oz. twice aily and Decholin tablets—one, three times daily, ith instructions to double the dose if he felt an ttack developing. Seven months later he had not ad another attack, although for the previous six ears he had not been free for longer than four eeks.

The differential diagnosis between cholecystitis nd abdominal migraine is difficult clinically—an nset in youth, more rapid recovery after the attacks, nd less definite and localised abdominal tenderness ould be in favour of a diagnosis of abdominal igraine.

There are undoubtedly instances of migraine elieved or cured by cholecystectomy, but most cases f this "biliary" type are, in our opinion, associated ith hepatic rather than gall-bladder dysfunction, nd will respond to the administration of glucose, bile acids, and a general dietetic restriction.

Stimulation of the flow of bile by duodenal atheterisation with or without the introduction of [illegible] sulphate has been successful in several [illegible] ok[3] has recommended the following régime: after a complete starvation day, give 2 to 4 drachms of a 50 per cent. solution of magnesium sulphate one hour before rising; during this hour the patient lies semiprone on the right side, and he then takes half a pint of hot water or hot tea. This procedure is repeated each week; in addition, fats and in certain cases eggs, chocolate, cocoa, coffee, and alcohol are eliminated from the diet.

Some of these cases resemble clinically the type described by Newman as due to dyskinesia of the gall-bladder, and in these treatment by atropine or belladonna is indicated. In others of the "alimentary" group it appears that duodenal stasis is the primary lesion. X rays may show a wide dilatation with delay, or more usually a "to and fro" movement in the duodenum. Higgins[4] has drawn attention to the occurrence in chronic duodenal ileus of migraine which is relieved by duodeno-jejunostomy.

Opinions differ as to the part played by the "liver-gall-bladder-gastro-duodenal" factor in migraine, but it would appear certain that, although its importance has been exaggerated by some writers, yet there are many cases which are intimately associated with hepatic dysfunction and relieved by its correction.

DIETETIC TYPE

In close association with the above group is the dietetic type; but it is improbable that diet plays an important part in the production of migraine. All manner and varieties of diets have been recommended from time to time—a high fat or a low fat diet, withdrawal of all forms of animal protein from the food, a full carbohydrate diet or one with carbohydrates eliminated—each advocate of a particular diet extolling its virtues and turning a deaf ear to the claims of its rivals. If in a particular case it seems probable from a careful history that diet is an important predisposing factor, then it is justifiable to try the value of sensitisation tests as for asthma. If a positive result is obtained it is clear that the offending article must be excluded; if negative, then omit, first, carbohydrates; secondly, animal protein; and, if still unsuccessful, prescribe a purine-free diet.

Many diets have been recommended on a purely empirical basis, but in such a protean disease it seems unwise to do this. It is probable that quantity and regularity are more important factors than quality.

A METABOLIC TYPE

The observations that acetone is present in the breath before an attack, and that there is an alteration in the pH and alkali reserve in an attack, although between the attacks the figures are normal, have led to treatment by withdrawal of fats and giving glucose and alkalis. Eight injections of 2·0 g. of an 80 per cent. solution of sodium carbonate are given intravenously in addition to sodium bicarbonate by mouth. On the other hand, Barborka[5] reports the results of the treatment of 50 cases of typical migraine by a ketogenic diet—80 per cent. of these patients being benefited by the diet.

The allegation that migraine is due to an inherited or acquired defect in protein metabolism—an inability to detoxicate putrefactive substances derived from animal protein in the intestinal canal—has led to treatment by withdrawal of proteins from the diet, changing the intestinal flora by the addition of *Bacillus acidophilus*, and the relief of spastic constipation in order to secure copious daily evacuations (Diamond[6]). Abnormalities in the uric acid metabolism are invoked to explain other cases of migraine.

The frequent onset of migraine in the early morning, the occurrence of attacks in many cases after prolonged physical exertion or after starvation, the observations of low blood-sugar readings in several cases, and the relief, especially in children, by the administration of glucose have suggested that transitory hypoglycæmia may be an important factor in the production of migraine. We feel that in many cases definite relief is given by the administration of glucose either between the attacks or as soon as notice of an attack is given; although, on the other hand, there are cases recorded where the ingestion of sugar has apparently precipitated an attack. It is difficult to correlate these views and findings.

Muck[7] has produced hemicranial attacks in patients subject to migraine by the induction of alkalosis by hyperpnœa.

It is extremely difficult to assess the importance of the metabolic factor in migraine, but in obscure and therapeutically refractory cases, where investigation reveals a metabolic error, the appropriate treatment should be instituted.

The association of headache, sickness, polyuria, throbbing heart, and constricted peripheral blood-vessels has suggested the resemblance to the clinical picture of a "contracted kidney," and the view has been promulgated that in migraine there is an accumulation in the blood of some toxic substance requiring elimination. The occurrence of migraine in undoubted cases of chronic nephritis has led to the description of the *nephritic* type. We must bear in mind this association, though it is difficult to be certain of the nature or importance of the relationship between these two conditions.

AN ALLERGIC TYPE

Some regard the fundamental cause of migraine as an anaphylactic shock. The well-known relationship with asthma, urticaria, and angioneurotic œdema supports this view. Pagniez[8] has given a full account of the appropriate measures directed to the desensitisation of the nervous system, and good results have been claimed from the administration of weekly injections of 1 c.cm. of horse serum for two months, or from taking 0·5 g. of peptone before each meal or injecting peptone subcutaneously. In one of our cases it was found that the migraine attack occurred only after eating chocolate, and was cured by the elimination of chocolate from the diet; in to by all authors. Idiosyncrasies are common. Hamblen and Hamblin describe a case in which the patient remained fully conscious after grs. 30, and another case in which serious collapse occurred after grs. 21.

CONCLUSION

The logical conclusion to be drawn from a review of the incredibly large number of drugs and methods at present in vogue for the production of analgesia, with subsequent amnesia, during labour is that the most suitable method for the ordinary case, with one doctor and one midwife in attendance, having regard to safety, ease of administration and expense, is morphia in the first stage and chloroform towards the end of the second stage. For patients in hospitals and nursing-homes, and for affluent patients in their own homes, the most satisfactory drug in the first stage is morphia and, throughout the whole of the second stage, gas-and-oxygen, which should be supplemented by ether towards the end of the second stage.

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BANBRIDGE GENERAL HOSPITAL.—The Duchess of Abercorn last week formally opened the new district hospital at Banbridge, County Down, which has cost £56,000. The former union house has been reconstructed and remodelled, and unsuitable parts of the building and enclosing walls have been removed to obtain additional air and sun. One of the wings is fitted as a maternity home, and another as the nurses' home. The total number of beds contemplated is 93, but in an emergency a greater number can be accommodated. Some distance at the rear is a fever hospital, with accommodation for 44 patients. The building stands high in grounds full of old trees, and the windows command glimpses of the Mourne mountains.

MIGRAINE *

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(Concluded from p. 126)

Ætiological and Therapeutic Considerations

WE have been forced to the conclusion that migrai constitutes an extremely complex problem, th there are many types and variants, and that th are many different factors—external and constitutional—at work in the production of this ve distressing malady. In discussing the symptomatology reference has already been made to five clini types—bilious, ocular, menstrual, cerebral, an allergic—to migraine-epilepsy, to the migrain constitution, and to several other factors which w consider play rôles of varying importance. We propo now to extend the number of these groups and discu them in somewhat greater detail. The treatment wi naturally vary with the suspected causation, and w think it will be most convenient if, at the end of eac paragraph on a particular type, we give a bri outline of the treatment which has been advocat as most likely to benefit that type.

AN ALIMENTARY TYPE

Particular attention has been paid by Fre authors to the "bilious," "abdominal" or "du denal" type of migraine, in which it is thoug that the causative factor is an abnormality in t gastro-intestinal tract or liver. Hunt[1] has discu carefully the differential diagnosis, in this importa and common type of case, between "abdomi migraine," gastric influenza, acute food poisoni gall-stones, and chronic cholecystitis. The gall-bladd has frequently been blamed for these attacks, but t results of cholecystectomy have in many instan been disappointing. McClure and Hunting analysed a group of cases of "abdominal migraine in six such patients, whose gall-bladders were remov for organic disease, the headache was unaffected b the operation.

Estimation of the efficiency of liver function undoubtedly difficult, and there is consider variation in the results of these tests in this type case. Nevertheless, there would seem to be a c siderable amount of evidence pointing to li dysfunction as the initial cause, and Hunt sugg that in many of these cases the primary lesion i subacute hepatitis, resulting from absorption toxins or bacteria from the intestinal tract (e colitis or appendicitis) or other areas of infecti such hepatitis may allow the passage of orga into the gall-bladder causing chronic cholecy or the formation of gall-stones, and may be unaffe by the removal of the diseased gall-bladder u the source of infection is also attacked. He q an interesting and suggestive case in which ch cystectomy and many other forms of treatment ough he had demonstrated anatomical facts to pport his contentions, when actually such is not the se. Quite apart from the lack of evidence, this pothesis is unconvincing, and any theory based on raised intracranial tension seems to be conidicted by what we know of the cerebro-spinal fluid essure in migraine.

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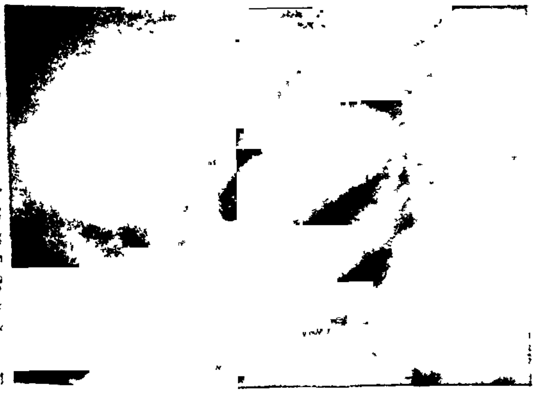
* The opening paper at a discussion at the Harveian So on Dec. 8th, 1932.

THE ENDOCRINE FACTOR

Almost all the endocrine organs have been blamed one time or another for attacks of migraine. The sociation on the one hand with hyperthyroidism, with hypothyroidism on the other, has led to ray treatment of the thyroid or to the use of ugol's iodine or thyroid extract. Hartung[18] has ported cases in which the attack was invariably it short by an injection of adrenaline. The relation tween migraine and the ovarian and pituitary cretions is probably more important. The frequent nset at puberty, the intimate relationship with the enses in many cases, and the marked diminution the attacks after the menopause or during pregnancy re all cited as factors in favour of an endocrine igin.

An abnormal inter-relation is often postulated tween the thyroid, pituitary, and the sex glands, nd on this theory migraine has become easy game r the pluriglandular therapists. They have not ways been discrete or scientific in their use of their roducts or their claims, and have thus brought ndocrine therapy into disrepute. Jelliffe sums up e position in a nutshell when he says: "Naturally e endocrines cannot be neglected—various authors mplicate now this, now that, and usually have three r four balls in the hypothetical endocrine air and ot all gonads."

FIG. 2



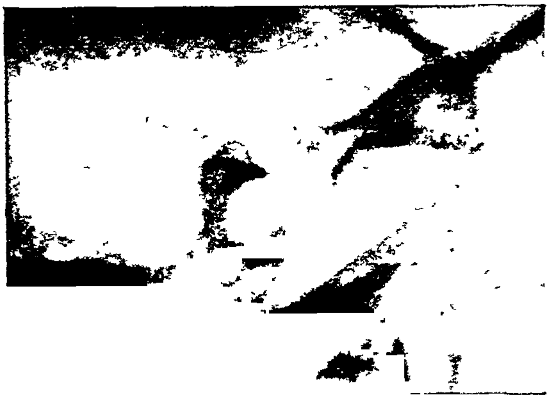
very good example of a "bridged-in sella" from a man of 23. who gave a history of six epileptiform attacks, but an otherwise normal previous history, and no account of periodic headaches.

In migraine cases showing an intimate relationship ith the menses, Hartung[18] has recommended ypodermic injection of anterior and posterior lobe ituitary extract or of whole-gland extract twice a eek for the first month and thereafter once weekly, nd, in addition, oral administration of the whole owdered gland (gr. 1/20–½). Treatment has been ontinued for three to four years.

On the grounds that many cases of migraine are ue primarily to ovarian dysfunction, Blackie and ossack[19] have treated several cases of "menstrual igraine" with Collip's placental hormone—Emmenin omplex (Glaxo) ½–1 drachm twice daily, except uring the menstrual period. Although their line of treatment was empirical, yet we have found it successful in "menstrual migraine."

Recently A. P. Thomson[20] has reopened the problem of intermittent headache occurring particularly at menstruation, and its association frequently with radiological abnormalities in the sella turcica, as originally suggested by Timme. He would prefer to regard his cases as different from typical migraine, and emphasises that few were able to localise the headaches, which were never unilateral and never of the expanding type of "classical migraine." For the reasons which we have given in discussing the clinical aspect we feel that we must regard them as migraine variants—"menstrual migraine." Moreover, out of his 25 cases, 10 developed similar headaches at irregular intervals as well as at the menstrual periods.

FIG. 3



The sella turcica in a man of 47, suffering from traumatic neurasthenia. No history of headache.

Thomson suggests that, owing to abnormal ossification around the pituitary body or to unusual development of the diaphragma sellæ, the pituitary body is enlarging in a limited space and therefore gives rise to severe headache. Radiological abnormalities in the sella turcica were demonstrable in 17 out of 25 cases, the most common abnormality being ossification of the interclinoid ligaments.

The work of Aschheim and Zondek and others has demonstrated quite clearly the relation between the activities of the ovary and the anterior part of the pituitary body. Hormones elaborated by the basophilic cells of the anterior pituitary stimulate the ovarian follicles and determine the function of menstruation. Experimentally it is shown that the administration of the ovarian follicular hormone causes a diminution in the activity and size of the pituitary, and the results of treatment by such hormones have been remarkably successful in Thomson's cases and in others of our own. He recommends that three injections of theelin 1 c.cm. (50 rat units each) should be given in the week before the period is due, but when the headaches occur at irregular intervals as well as at menstruation, two to three injections of 50 units should be given regularly each week. It seems possible that it will not be necessary to continue the treatment (there is often unfortunately some local pain for two to three minutes after the injection) throughout the patient's menstrual life. Although we can endorse the therapeutic value of an active ovarian follicular hormone in these cases, yet we dislike the view that the headache is due to pressure of the swollen pituitary body against another case, recorded by Lubbers,[9] the migraine attack occurred only after eating beans. After a test-meal of beans the leucocytes immediately diminished in number and migraine developed eight hours later. Skin tests were negative; preventive ingestion of 0·5 g. of peptone before eating the beans warded off the migraine, though the patient felt chilly and drowsy.

Thus the treatment of migraine due to food allergy is carried out by "elimination dieting," modified according to the suspected factor.

Rowe[10] has done a considerable amount of work in support of the above views, and Balyeat and Brittain[11] consider that the exciting factor in migraine is probably always a specific sensitivity to one or more foreign proteins, and they would regard physical and mental fatigue as predisposing factors.

VASOMOTOR AND SYMPATHETIC TYPES

Allied to the above is the *vasomotor type*, in which it is held that the migraine is the result of a localised intracranial œdema. Erythromelalgia, attacks of angioneurotic œdema, orthostatic albuminuria, and syncopal attacks were all present in association with typical migraine in a patient recently under observation. Treatment with full doses of calcium lactate or calcium subcutaneously produces good results in such cases. In this connexion it is interesting to recollect the popular treatment for the headache of "the morning after the night before" by calcium lactate.

At this point it will be convenient to refer briefly to the *sympathetic* type. Acting upon the supposition that migraine was dependent upon an excessive stimulation of the sympathetic and a resultant spastic contraction of the cerebral arterioles with subsequent relaxation, an attempt was made to control such vasospasticity by the use of a sympathetic depressor—ergotamine tartrate (2 mg. by mouth). Tzanck, Trautmann,[12] Targhetta, Ignelzi[13] have reported very encouraging results from this treatment. Irradiated ergosterol and calcium therapy were employed in addition, in order to increase the threshold of resistance to sympathetic irritability and to render the migraine attack more amenable to treatment by the ergotamine tartrate.

Dandy[14] has attempted to achieve the same object surgically by removal of the first thoracic sympathetic and inferior cervical ganglia. The results were encouraging, but he preferred to reserve his opinion as to the absolute value of the procedure.

SOME OTHER TYPES

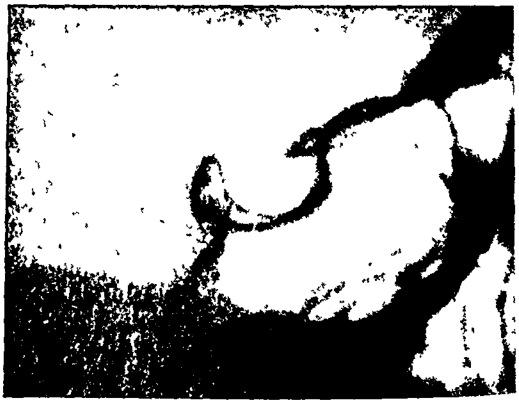
Before discussing the inter-relationship of the endocrine organs, the autonomic nervous system, and migraine, we will refer briefly to the ocular, sinus, fibrositic, para-epileptic, and cerebral types.

Some reference has already been made to the *ocular* type. There is still much difference of opinion as to the importance of the rôle of errors of refraction and slight muscle-balance defects. It is suggested that eyestrain increases the irritability of the central nervous system and thus produces migraine. In the Savill lecture in 1924, Hurst[15] stated the case in favour very ably and strongly; recently Elliot[16] has stressed the significance of ocular abnormalities. Although there are undoubtedly many cases in which the visual apparatus is primarily at fault, and in which migraine is cured by correction of refractive errors, &c., yet we feel that the importance of this factor has been over-estimated.

Whatever the relative importance of the part played by the eyes, it is obviously our duty to see that no person is allowed to remain for years an unrelieved migrainous subject without careful ocular tests and correction along the lines indicated by Elliot.

There are a certain number of true migraine cases with well-marked *sinus disease*, in which the treatment of the sinus lesion has led to cure of the migraine. The association of migraine or migrainous neuralgia with non-articular rheumatism, brachial neuritis and scalp tenderness in an attack, separates off a further group—the *fibrositic* type. This group should be treated by salicylates, physiotherapy (ionisation) or the local injection of Impletol (a complex combination of a local anæsthetic with caffeine prepared by Bayer). The true cases of migrainous neuralgia respond to alcoholic injection of the Gasserian ganglion or its branches.

FIG. 1



Radiographic appearance of the sella turcica in a normal subject

The similarity in many respects between migraine and epilepsy and their occurrence in the same patient has led to the separation off, from a pathogenic and therapeutic point of view, of a *para-epileptic type*. The knowledge of this relationship led to treatment of migraine by bromides, luminal,[17] and the ketogenic diet.

Certain cases of typical migraine result from macroscopic intracranial lesions constituting what might be conveniently referred to as the *cerebral* type. In one of our series an occipito-parietal angioma was found, and Collier records a similar case with typical monthly attacks of migraine of three years' duration. The patient died suddenly, and a tumour was found in the convexity of the occipital lobe, corresponding to the field in which the visual phenomena were wont to appear. Further, apparently typical migraine attacks occur in patients who have died later of a ruptured congenital cerebral aneurysm. This association has been observed and reported too frequently to permit of its dismissal as a coincidence.

Here we might conveniently refer to the much quoted hypothesis of Spitzer. This author suggested that a congenital stenosis of the foramen of Munro forms the substratum of the migraine constitution. During an attack the foramen becomes plugged by a tag of congested choroid plexus; in this way the intracranial tension is raised, temporary internal hydrocephalus results, and pressure of the cerebral cortex against the unyielding dura causes first the premonitory symptoms and later the headache. Although this speculation has received considerable notice, we must bear in mind that it is purely a hypothetical conception. Spitzer is often quoted as

Between the attacks some of the cases may suitably be treated with magnesium sulphate, glucose and bile acids, theelin, thyroid, special diet, or psychotherapy. The remaining group of migraine cases, which we are unable to place in a special category, must be regarded for the present as idiopathic, and treated with one of the following:—

(1) Luminal, gr. ½–1 bis die.
(2) A prescription similar to Gowers' mixture:—
R

Sod. brom.	gr. x.
Liq. trinitrin	♏ i.
Liq. strych.	♏ v.
Ac. hydrochlor. dil. ..	♏ x.
Tinct. gelsem	♏ v.
Aq. chlorof. ad ℥ ss. ..	℥ ss. ter in die post cibos,

or R

Ext. thyroid	gr. ½ three times daily.

For the very severe cases which do not respond to any of the above measures we would recommend a right subtemporal decompression. Gordon Holmes says that he has never known migraine persist in a patient who has had a surgical or traumatic decompression.

Therapy is undoubtedly difficult in such a polymorphic disease, but we must not allow ourselves to become despondent, despite the importance of the hereditary factor and the migraine constitution.

The expenses of this investigation were defrayed by the Medical Research Council.

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OBSERVATIONS ON GALL-STONE CASES

By E. R. Flint, M.B. Leeds., F.R.C.S. Eng.

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GALL-STONES are formed for the most part in the gall-bladder, either as a deposition from the bile in some metabolic disturbance or secondarily to cholecystitis, however that may be produced. When they are found in the common duct they have usually passed into it from the gall-bladder, but in a small proportion of the cases they either come direct from the liver or are formed in the common duct itself. Those which come from the liver are bilirubin stones and splenectomy may be required to prevent recurrence; those which form in the common duct appear as a result of cholangitis, past or present, and may be single or multiple, are often quite large, contain little if any cholesterin, and crumble easily. An appreciable amount of cholesterin is evidence of formation in the gall-bladder. If symptoms of a stone in the common duct recur, the most usual cause is that the stone was overlooked at the first operation.

The relative frequency of stones in the gall-bladder to stones in the common duct coming to operation is about 15 to 1, and though circumstances may render gall-bladder stones and their treatment a danger to the patient, stones in the common duct are certainly a greater menace to life and present more difficult problems to the surgeon.

The success of operations on the common duct depends very largely, in my opinion, on pre-operative preparation against those factors which are responsible for the deaths. It is not always easy to be sure of the real cause of death, but in 75 post-mortem examinations made during six years on patients dying in the Leeds General Infirmary after operations on the biliary passages the prominent features were:—

1. Peritoneal sepsis—mostly local, sometimes general	27
2. Broncho-pneumonia (without peritonitis)	17
3. Cholangitis	10
4. Myocardial degeneration	10

In these 75 cases the operation performed and the cause of death given (tabulated as above and in the same order) were:—

Cholecystectomy (36)		Cholecystotomy (17)		Choledochotomy (22)	
1.	14	1.	8	*1.	5
2.	9	2.	4	2.	4
3.	2	3.	1	3.	7
4.	3	4.	2	4.	5

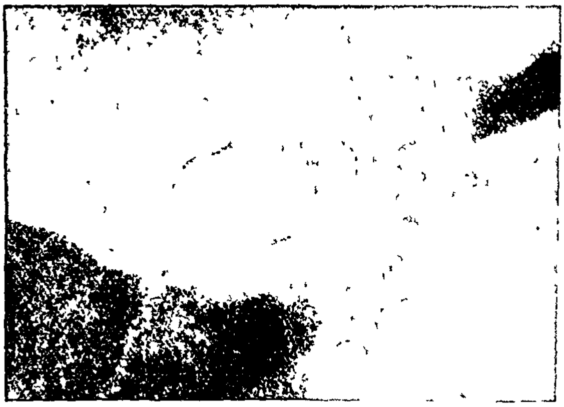
* Four of these had a gall-bladder operation at the same time.

In many of the cases there were multiple findings at autopsy—e.g., toxic changes in the heart, liver, kidneys, and lungs were not uncommon in the cases with peritonitis, as would be expected, but so far as possible the causes of death here given show the primary lesions. Broncho-pneumonia, for example, is only given separately when it was not accompanied by acute infection elsewhere. Again, myocardial degeneration is given as the cause of death only when it was the predominating lesion, but some defect in the heart muscle was quite common, and it is impossible to exclude its influence in some of the broncho-pneumonic cases. Bearing in mind these limitations and the fact that the number of post-mortems is small, yet some interesting features are revealed.

PERITONITIS

The predominating cause of death is peritonitis—usually local, occasionally general. It accounts for more than a quarter of the total mortality. A degree of local peritonitis is a necessary reparative process, and possibly some reduction should be made to allow for the pathologist's over-statement on this account. But where there is a suppurative peritonitis (as in practically all the cases here reported) it should be regarded as a pathological lesion. It is well known that acute infective processes in the gall-bladder can be trusted to remain localised; we feel so confident of this that a policy of operative delay is deliberately taught and practised. The delay is usually a matter of a week or so, by which time the acute symptoms have subsided. At this stage it is common to find considerable peritoneal injection, if not actual pus, around the gall-bladder. This is especially the case when a stone is impacted in the neck of the gall-bladder, the type of lesion which accounts for most of the cases coming under the heading of acute gall-bladders. In fact, there is a state of affairs resembling very closely the acute obstructed appendix; in both cases perforation is a the abnormally ossified sella turcica or an unusually well developed diaphragma sellæ. It is, of course, extremely difficult to deny a factor of compression against the diaphragma sellæ, but we feel fairly certain that the abnormal ossification as seen in the "bridged-in sella" does not cause compression of the pituitary body. There is ample space laterally for the pituitary to enlarge, and if the sellar tension was raised to the extent which is suggested we might reasonably expect some ballooning of the sella. Thomson mentions his failure to demonstrate the "bridged-in sella" in individuals who do not complain of headaches.

FIG. 4



An almost completely "shut-in sella" in a woman of 32, who had suffered from migraine-epilepsy for many years. There was no relation between the attacks and the menstrual periods.

We, however, have collected several cases of "bridged-in sellæ" from patients who have never suffered from migraine (Figs. 2 and 3). It appears then that such radiological abnormalities are found in patients of either sex without any history of headaches, and also in cases of migraine or intermittent headache not of the menstrual type (Fig. 4), and we have a patient closely resembling Thomson's cases, in respect of the relation to the menses, who has an almost completely "shut-in sella" and yet gives a history of typical migraine attacks in addition to the menstrual headache (Fig. 5). This case seems to argue in favour of our view that the intermittent headache referred to by Thomson is a migraine variant. *We propose to deal more fully with this interesting problem in a subsequent paper.*

PSYCHOLOGICAL ASPECTS

As we have pointed out in discussing the migrainous constitution, there is no doubt that in many cases the psychological factor is of considerable importance. True attacks of migraine are very frequently encountered in association with mental overwork, anxiety, or "suppressed rage and humiliation." We have one patient who said that, by allowing himself to get very annoyed and "worked up," he could almost "throw himself" into an attack. Hilda Weber[21] has recently discussed very fairly and clearly the psychological factor in migraine, and reported a case in which a migraine attack was a means by which the unconscious found expression.

> The main purpose underlying the attack "was the preservation of the infantile narcissism and the connected feelings of omnipotence." From earliest years this patient by her migraine had achieved a two-fold end; it not only kept her at home but it *also enabled her to make an otherwise harsh and tyrannical mother her slave.* During the attacks she became the centre of the family attention, and this in itself must have gone far to compensate for the pain which she suffered. Much as she disliked physical discomfort she hated still more the pangs of thwarted self-love.

Excellent results followed psychotherapy, and without in any way exaggerating the importance of the psychological factor, it seems clear that other cases like the above will respond to psychotherapy when other means will fail.

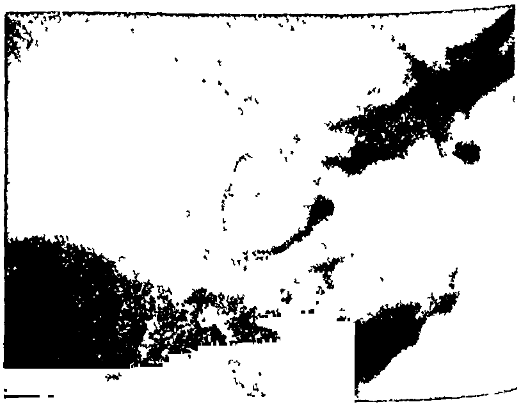
Conclusions

Ætiology.—Migraine is obviously a complicated *and difficult problem, and despite an immense* amount of research the essential causation still remains obscure. It seems certain, however, that there must be at least two factors, "central" and "peripheral." In the present state of our knowledge any view must be speculative, but we are inclined to regard migraine as a vasomotor manifestation associated with spasm of the cerebral arteries—most commonly branches of the internal carotid—due to stimulation of sympathetic fibres, either as the result of direct pressure or via the endocrine system, occurring in a susceptible person with the migrainous constitution and with precipitating factors—metabolic, alimentary, ocular, sinus, &c.

Investigation.—Success in treatment will depend on ability to place a particular case of migraine in its proper category and apply the appropriate remedy. It follows that the complete investigation of a patient with migraine will include :—

(1) Careful previous and family history and a minute study of the symptomatology.
(2) Physical and psychological examination.
(3) Careful testing for ocular abnormalities.
(4) Radiological examination of sinuses, sella turcica, gall-bladder, and gastro-intestinal tract.

FIG. 5



The sella turcica in a woman of 47, having severe migraine attacks (with visual phenomena), occurring chiefly at the menstrual periods but not invariably so.

(5) Full examination of the cerebro-spinal fluid, including pressure readings.
(6) Biochemical investigations (blood-sugar estimation, urine, alkali reserve).
(7) Basal metabolic rate investigation.

Treatment.—It is customary to discuss the treatment of migraine under two headings: (*a*) in the *attack, and* (*b*) *between the attacks. In the former* it is useless trying to "fight off an attack," and we would recommend retirement to a quiet darkened room as soon as possible, and the administration of one of the following :—

(1) Veramon grs. 6—repeat in half an hour.
(2) Phenacetin grs. 15 and caffein. cit. grs. 5, to be repeated, if necessary, at hourly intervals for three doses.
(3) Compral, 3 tablets every six hours.

which threaten patients with stone in the common duct—viz., hepatic failure and post-operative hæmorrhage.

THE HEART

The post-mortem findings in the heart are myocardial degeneration in some 22·8 per cent. of common duct cases and about 7 per cent. of gall-bladder cases. It is difficult to be sure of the significance of this observation, since some myocardial defect is so commonly seen in many gall-stone cases. But so far as I can judge from the available evidence, the greater frequency in common duct cases is related in some way to the presence of jaundice. Retained biliary products have a definitely toxic effect on the parenchymatous tissue of organs; this is seen clinically in the kidney, where deep obstructive jaundice is sometimes associated with albuminuria and a high blood-urea. Experimentally, intraperitoneal injections of bile are fatal to rabbits, and intravenous injections are fatal in even small doses. Death results from changes in the myocardium, where necrosis is produced, and severe degeneration is also found in the kidneys and liver. The heart is perhaps peculiarly vulnerable in these circumstances in the human being because of the prevalence of fatty infiltration in obese subjects.

PRE-OPERATIVE TREATMENT

It is seldom necessary to rush operation in common duct cases; and I believe that preparation for operation is a very vital factor, and one which does not receive the attention it should. Consequently the total mortality of common duct calculus cases is reported as being in the neighbourhood of 15 per cent. My own mortality is 7·5 per cent.; 4 per cent. in private patients and 10 per cent. in hospital cases. I feel confident that this has been achieved very largely through careful, and sometimes long, preparation.

In addition to the ordinary medical care of the [illegible] of which rest in bed is perhaps the most [illegible] the methods employed before operation (and they may be needed afterwards as well) are as follows:—

1. *Water.*—This should be given very freely, because dehydration is not uncommon in jaundiced patients, and also it flushes the kidneys and so tends to remove the renal threat, which is a real one in many cases. If the common duct is drained to the surface as much as 1500 c.cm. of fluid may be lost in 24 hours; this can be prevented to some extent by using a T-tube.

2. *Glucose.*—This is essential and may be given by any route along which absorption is certain. Repeated or continuous intravenous injections seem to be most effective, and 10 per cent. glucose and 1 per cent. saline solutions should be used. In addition to being an easily assimilated form of food, it seems to have an especially beneficial effect on the liver and kidneys.

3. *Calcium.*—If there is reason to suppose there may be post-operative bleeding, 5 c.cm. of 10 per cent. calcium chloride is usually given on three consecutive days; I am not at all sure that calcium chloride is reliable, and I much prefer one or more blood transfusions. In addition to an efficient anti-bleeding effect these supply a vitalising factor of great potency, and are therefore useful even when post-operative hæmorrhage is not anticipated.

SURGICAL TECHNIQUE

Most anæsthetics damage living cells, and it is necessary to choose that one which produces the least insult to the liver, particularly in common duct cases. I have no doubt in my own mind that spinal anæsthesia best fulfils the conditions. It has other great advantages but some drawbacks, the chief of which lies in getting it to the right level. This is largely a matter of attention to detail and accustoming oneself to the behaviour of one of the many techniques from which a choice may be made.

Owing to the remarkable variation in the anatomical arrangements of the bile-ducts and the hepatic and cystic arteries, some of which I have described,[3] there are perhaps more traps for the unwary in the surgery of this region than in any other, and it is therefore of the utmost importance that nothing be divided that has not been clearly identified. This should be a very obvious principle, but it is by no means always applied; it requires not only *unremitting care and infinite patience* to define the essential structures, often in trying circumstances, but also great gentleness, as the parts are highly sensitive to manipulation.

It is especially important to prevent chilling of the portal blood in common duct cases. Crile applies diathermy to the external surface of the body over the liver; I have no experience of this, but have used hot applications, and by means of thermometers inside the abdomen I have not been able to detect any material rise in temperature. The most practical method is the use of hot moist intra-abdominal packs, as is the usual practice, but extra precautions should be taken to keep these warm and to prevent the exposure of viscera.

With adequate pre-operative preparation it is usually safe to remove stones from the common duct and perform cholecystectomy (since the bladder in these circumstances generally needs removal) at the same time, but occasionally the patient is so ill with cholangitis that drainage of the common duct is all that is permissible; the stones can be dealt with at a subsequent operation.

When operating for a supposed *stone in the common* duct careful palpation may fail to detect one; is it necessary to open the duct and explore from the inside to make sure? Generally I should say no, but there are occasions when I believe it is impossible to be sure without open exploration:—

1. When the head of the pancreas is thickened and hard. It is easy to miss a stone in these circumstances, especially in the region of the ampulla.

2. When the common duct has lost its normal bluish colour, and is rather thickened and dilated. Dilatation with a contracted gall-bladder is usual and does not necessarily mean obstruction, but if there has been jaundice one should make absolutely certain the duct is clear, and this may be impossible with a small stone without opening the duct. It is as well to remember in this connexion that some 25 per cent. of patients with stone in the common duct have never had jaundice and about 5 per cent. do not give a history of pain.

The post-mortem records are interesting in that stones were found in the common duct in 6 out of 33 cases dying after cholecystectomy, no operation having been performed on the common duct. Stones were found at autopsy in the common duct in 3 out of 22 cases dying after choledochotomy. These cases are not quite so convincing as the first series, since the notes gave no indication whether the duct was intentionally merely drained.

When there is a stone in the lower end of the common duct it is better to remove it through the duodenum than to make a prolonged effort to get it into the supra-duodenal portion. Trans-duodenal choledochotomy certainly has no greater mortality than common complication, but there is this difference—in the former we know that the mischief will be localised, in the latter we fear it will not be. In the first case we wait; in the second we operate at once, and in both instances we are pretty sure the patient is safe, at any rate, for the time being. Why, then, should there be such a large percentage of peritonitis in the mortalities which follow gall-bladder operations? I believe it is due to one of two reasons (I exclude introduction of organisms from outside; this surely cannot be a factor in these days):—

1. The infection is not localised so readily as we think; this seems an unlikely explanation since general peritonitis is not common with acute gall-bladder infections.

2. Operation is performed at the wrong time. It is customary to wait a week or so for symptoms to subside and then to operate. Usually, of course, things go all right, but sometimes there is still active inflammation, and perhaps pus; then the size of the wound and the manipulation necessary to do what is required must disseminate the infection rather widely, into freshly opened-up local areas, or even into the general peritoneal cavity. What should we think of a surgeon who made such inroads in the presence of a persisting infection around the appendix?

That this is probably the true explanation is supported by the figures of fatal peritonitis following gall-bladder operations as compared with those of common duct operations, where a really active pericholangitis is rarely seen—41·5 per cent. as against 22·8 per cent. (5 in 22 autopsies after a common duct operation; in 4 of these the gall-bladder was removed at the same time).

The practical inferences to be drawn seem to be: either to operate on the acute gall-bladder at once, as we do on the appendix (the cases I have treated in this way have done very well), or to leave things to settle much longer than is the custom at present. The thing to avoid is operation during the stage when active pericholecystitis may still exist.

FATAL LUNG COMPLICATIONS

In the absence of a local suppurative condition these follow any of the three operations with about the same frequency. When suppuration is present the lungs are involved in most cases, but not more often, I think, than we expect to see after operations on suppurative lesions anywhere. Lung complications, not necessarily fatal, are seen, I believe, more frequently after gall-bladder operations than after most other intra-abdominal manœuvres, partly because of the technical difficulties in a very sensitive field so near the diaphragm, and partly because obesity renders these patients peculiarly vulnerable. Most gall-stone patients are fat, and the difficulties of operation are thereby increased. But excessive fat increases the risks to the patient in other ways too. Fatty tissue has a low resistance to infection, and where the common duct or gall-bladder contain organisms there is apt to be some infection in the wound. This in itself is not likely to be serious, but more retraction is necessary than in thinner patients in order to expose the essential parts, and this makes breathing more painful afterwards. Large or small areas of atelectasis are apt to be induced thereby, and this, together with the low-grade infection in the fatty wound, may determine the onset of septic broncho-pneumonic areas. Infarcts of the lung are more common, too, in fat patients; possibly these two conditions are one and the same, but I think not. There are reasonably reliable tests of function of some organs to inform the surgeon whether the organs are capable of doing what they will be called upon to do, but with the lungs it is different; we rely on the ordinary clinical examination for evidence of reasonable soundness and virtually know very little about their vital capacity. I admit I do not see quite how we should proceed in this matter, but there are certain physiological methods which might be applied and give us a better understanding of the functional efficiency and elasticity, so to speak, of these organs under stress. The empirical use of carbon dioxide has done a good deal, I think, to lessen undesirable lung complications.

CHOLANGITIS

Cholangitis is the cause of death much more frequently after common duct operations than after those on the gall-bladder—31·8 per cent. against 5·5 per cent. It is many years since E. V. Graham[1] pointed out that hepatitis is a more or less constant factor in cases of cholecystitis, and I have corroborated this,[2] and at the same time shown some apparent connexion between the degree of hepatitis and the results of the van den Bergh and lævulose-tolerance tests. The lesion is a pericholangitic small-celled infiltration, sometimes with fibrous and fatty changes. Interpretation of the hepatitis differs, but it is agreed that the condition is most advanced in the common duct cases, leading in extreme instances to intra-hepatic abscesses. The damage to the liver is caused either mechanically by back pressure, often associated with sepsis, or by poisoning of the parenchyma by the retention products carried in the blood stream, whatever the nature of these may be. The cause is probably not bilirubin itself, but bilirubinæmia has considerable practical interest; it acts as an indicator, giving information of what is occurring in the liver, rather as urea in the blood does for the kidneys in prostatic enlargement. In either case the rise is due to retention, and indicates damage to the organ involved. In such circumstances we should do a two-stage operation for prostatic enlargement, and the same principle applies to common duct obstruction due to stone; but there is this difference: in the former instance we have to relieve the back pressure by surgical means, whereas in the latter it is done by Nature if we will have the patience to wait, since it is rare for a stone completely to block the common duct for long.

The dangerous periods, so far as the liver is concerned, are during the time the bilirubin curve is rising rapidly, which it does when the duct becomes suddenly blocked, and when the curve is rising gradually and continuously to a high level, as in malignant obstruction. In the first case the wise course is to wait for a falling curve, which will almost certainly appear in quite a short time, and in the second (if any operation is to be performed) not to delay too long, for a remission of the jaundice is most unlikely.

It is only possible to be sure of the state of affairs by doing repeated van den Bergh tests, because there is a rising curve for bilirubin in the blood before jaundice reveals itself clinically. The van den Bergh reaction in this obstructive type of jaundice is, of course, always of the prompt direct variety. The trouble with hepatic tests is that, though they may give evidence of liver inefficiency, they are not able in most instances at present to demonstrate the degree of injury. But if we look upon hyperbilirubinæmia as an indicator of some hepatic damage, in the same way as we do high blood-urea in kidney conditions, and deal with it on similar principles, I think we shall do much to ward off two of the factors o definite proof exists of the nature of the infecting rganism. The fact that *B. dysenteriæ* Sonne was solated from a sister who had been ill at the same time s Case 4 makes it likely that in this case, at any rate, he infecting organism was of the Sonne type.

In 1926 Fraser, Kinloch, and Smith [2] reported an utbreak of dysentery in Aberdeen. In 1929 Charles nd Warren [1] recorded a similar outbreak in Newcastle. Various other writers have described maller epidemics. The attention of this department was directed to the matter by an outbreak in the children's ward of the Royal Hospital in 1928, and since then there have been two smaller outbreaks. In spite of the attention that has been drawn to epidemics of bacillary dysentery in the last few years, there does not appear to be general recognition of the fact that the disease is endemic in this country.

It is well recognised that in certain cases of Shiga and Flexner infection the toxæmia may be so everwhelming as to bring about a very early fatal termination. Charles and Warren have recorded several cases of the sort, but the Sonne bacillus has in the past usually been regarded as only mildly toxigenic. Fulminating infection with rapid death due to *B. dysenteriæ* Sonne, as in Case 4, does not appear to have been reported before. That death should occur as the result of a dysenteric infection without the appearance of the cardinal symptom of diarrhœa, as in Cases 1 and 2. does not seem to have been previously noted. This possibility should be borne in mind in cases of sudden death in children.

The post-mortem examinations on all the cases recorded were made by Dr. S. C. Dyke, pathologist to the hospital, at the instance of Mr. J. T. Higgs, coroner for South Staffordshire, and of Mr. A. C. Skidmore, coroner to the borough of Wolverhampton. I am indebted to the coroners concerned for permission to publish the cases; to Dr. D. E. S. Cunningham, of Upper Gornal, for material; to Dr. M. W. Wallace, of Wolverhampton, for the history of Case 3; and to Dr. Dyke for access to his notes and for advice and assistance.

TUBERCULOUS LARYNGITIS:

THE IMPORTANCE OF EARLY DIAGNOSIS

By Harold Barwell, M.B. Lond., F.R.C.S. Eng.

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Tuberculous laryngitis is pre-eminently a disease in which early diagnosis is all-important for successful treatment. As it is, with exceptions so rare as to be negligible, a complication of pulmonary tuberculosis, it can normally be recognised early if it is looked for; and I wish here to urge again, as I have done for over 25 years, that all phthisical patients must have their larynges inspected at regular intervals of a few months, whether or not they have symptoms referred to the throat, and that they be sent to a laryngologist if this complication cannot be excluded with certainty. A good many consumptives suffer from hoarseness, or have a characteristic weak voice; this is often merely the result of asthenia, but these patients also have an unusual tendency to attacks of simple laryngitis, partly from the strain of coughing and partly from infection by secondary organisms in the sputum. On the other hand, a tuberculous lesion, perhaps in the posterior commissure or at the upper aperture, does not necessarily cause any symptoms in an early stage, and the disease can, therefore, neither be diagnosed nor excluded by the patient's symptoms alone, but only by laryngoscopy.

Invasion of the larynx is usually the result of the entrance of tubercle bacilli contained in the sputum directly through the epithelium, and takes place most often in the neighbourhood of the vocal process where the mucosa is thin, closely applied to the cartilage, and liable to abrasion from coughing. The earliest lesions are, therefore, most often found at the level of the glottis and tend to spread from behind forwards along the vocal cord, or backwards to the posterior commissure. The upper aperture is seldom involved before the glottis, although not infrequently swelling of the arytenoids is the first lesion to attract attention, and the epiglottis is rarely attacked until the rest of the larynx has been extensively affected. It is often said that pallor is a characteristic feature of tuberculous laryngitis, but this is only partly true. Many consumptive patients are anæmic, and then the larynx, together with the other mucous membranes, will also be anæmic; in other cases the colour is normal or reddened from coughing and irritation by the sputum. Tuberculous granulations are usually pallid, the margins of ulcers are not hyperæmic, and arytenoid infiltrations are pale; but the unaffected portions of the larynx have no characteristic colour, and very often tuberculous infiltration on the cords, ventricular bands, and especially on the epiglottis, has a deeply congested red coloration. Granulations are typically of a *soft*, gelatinous appearance; when healing occurs there is but little fibrosis or deformity, in contradistinction to the lesions of syphilis or lupus, and stenosis causing dyspnœa is extremely rare.

FIG. 1

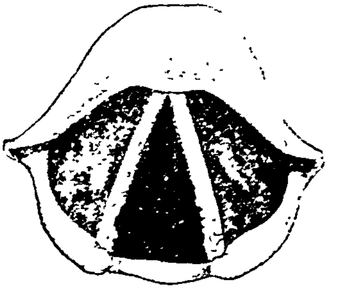

FIG. 5

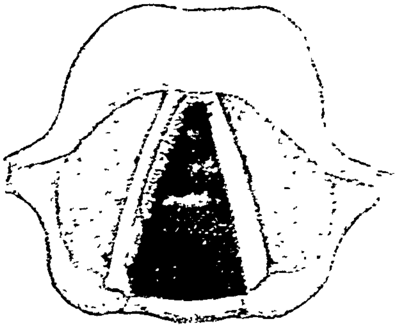

FIG. 1.—Tuberculous infiltration of vocal cords.
FIG. 5.—Epithelioma of vocal cord.

The illustrations are taken from "Diseases of the Larynx," by Harold Barwell, third edition, 1928. Oxford University Press.

CLINICAL VARIETIES

As any part of the larynx may be affected, the clinical picture is very variable, but for the sake of clearness five types may be described.

1. In the "chorditic" type the vocal cords are principally affected, and hoarseness and aphonia are early symptoms. The lesions are seldom symmetrical. Swelling and redness confined to one cord is not due to simple laryngitis; it may be caused by traumatism,

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[2] Fraser, A. M., Kinloch, J. P., and Smith, J.: Jour. Hyg., 1926, xxv., 453.

the more usual operation and has the advantage that bile flows into the intestine instead of to the surface. It has this further point in its favour: if no operation is performed on the gall-bladder at the same time the wound may be completely closed, whereas such a piece of technique after supra-duodenal choledochotomy is very risky.

During the final stages of any operation 10 per cent. carbon dioxide in oxygen is given, and this is repeated for ten minutes in each hour for several hours after the patient has returned to bed. I think two good effects are promoted by this: first, the lungs are more fully inflated by the deeper breathing, and atelectasis (which is probably the beginning of much post-operative chest trouble) is discouraged; secondly, better oxygenation of the blood is provided. I think there is no doubt that anoxæmia is responsible for some of the fall in blood pressure which follows many anæsthetics and particularly spinal administration. In addition, many of the special methods employed in pre-operative preparation should be carried on in the after-treatment as a routine.

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DYSENTERY AS A CAUSE OF SUDDEN DEATH

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That dysenteric infection may prove rapidly fatal, so rapidly in fact that in certain cases there may not be time for the development of any symptoms of the disease, does not seem to have been previously noted. The following cases are recorded with a view to drawing attention to this point. Every case was the subject of a coroner's inquiry. In two of them death occurred suddenly, and no cause was apparent before the post-mortem examination; in the remaining three it was evident that some form of intestinal infection was the cause of death.

CASE RECORDS

Case 1 (male, aged 9 years) retired to bed, apparently in normal health, but woke up at 3.30 A.M., vomited copiously and died within one and a half hours.

At *post-mortem* examination the body was that of a well-nourished male child. The cranial and thoracic cavities showed nothing abnormal. The spleen was rather enlarged and firm in consistency, and on section the cut surface showed numerous white dots marking enlarged and probably necrotic Malpighian corpuscles. The stomach contained some clear yellow fluid; the mucous membrane appeared healthy. The whole of the small bowel from the jejunum downwards contained a great deal of thick mucus. In the ileum the Peyer's patches were prominent and showed evidence of early necrosis of lymphoid elements; towards the lower end of the ileum small patches of lymphoid proliferation in the mucosa became evident; these increased downwards until the last few inches before the ileocæcal valve were thickly studded with them, and at the valve itself there was a definite ring of lymphoid proliferation and hyperplasia. This hyperplasia diminished rapidly from the valve downwards; the lower part of the large bowel was filled with liquid fæces.

Case 2 (male infant) appeared well when he was put to bed but was found dead a few hours later.

At *post-mortem* examination the body was that of a well-nourished infant; there were small petechial hæmorrhages scattered over the face and neck. The brain substance was soft. The heart and lungs were normal. In the abdominal cavity there were numerous enlarged soft mesenteric glands. The spleen and liver appeared normal; the kidney showed cloudy swelling. Nothing abnormal was seen in the stomach, duodenum, or jejunum. The ileum showed increased prominence of Peyer's patches from above downwards; towards the cæcum there was evidence of early ulceration. In this area the mucosa was covered with closely packed white nodules of hyperplastic lymphoid tissue, and these formed a definite ring around the ileocæcal valve. The whole of the large bowel showed intense proliferation of the lymphoid elements, which appeared as prominent white dots. The lower bowel was filled with liquid fæces.

Case 3 (male, aged 3 years) appeared well when he went to bed; he woke up at 6 A.M., vomited once and passed a loose stool with no obvious blood; diarrhœa continued until midday. The temperature was 101°–103° F., but his condition did not cause his doctor anxiety until the evening, when he became very collapsed and died at midnight.

At the *post-mortem* examination he was a well-nourished male child. The small bowel contained yellowish fluid fæcal matter, and the lower part of the large bowel was ballooned out with a large liquid stool containing mucus but no blood. Peyer's patches throughout the ileum were very prominent but showed no signs of necrosis; the mucous membrane of the lower few inches of the ileum and cæcum and the whole of the large bowel showed an intense proliferation of the lymphoid elements but no actual ulceration. A ring of lymphoid tissue similar to that described in the previous cases was found round the ileocæcal valve.

Case 4 (male, aged 6) suffered from diarrhœa of sudden onset which affected the whole family simultaneously. This boy collapsed and died within 12 hours; the rest of the family recovered. Cultures from the stools of a sister yielded *B. dysenteriæ* Sonne.

Post-mortem examination showed the intestines distended with gas; the contents were fluid, with some mucus but no obvious pus or blood. Peyer's patches throughout the ileum were very prominent but showed no signs of necrosis. The lower six inches of the ileum showed intense proliferation of lymphoid elements, increasing towards the caput cæcum where the hyperplasia almost surrounded the bowel. There was considerable reddening and œdema of the large bowel.

Case 5 (male, aged 65 years) had been in poor health for some time; he ate some pork at midday with the rest of his family and was taken ill at midnight with diarrhœa and vomiting, and died within 24 hours. He had no rise of temperature during the illness. The other members of the family escaped without severe symptoms. Post-mortem examination showed the same lymphoid hyperplasia of the ileum and the ileocæcal valve which was noticed in the other cases.

COMMENT

The most striking feature on *post-mortem* examination common to all the cases was the presence of a ring of lymphoid hyperplasia and œdema around the ileocæcal valve; this varied in size and extent from case to case; in some it extended for several inches up the ileum and down the cæcum. In some cases the ring was complete, in others not entirely so, but in every case it was a striking feature. No record of this appearance has been found in descriptions by other workers of post-mortem examinations on cases of dysentery. Charles and Warren[1] give a detailed account of the findings in fatal cases in the Newcastle epidemic but, though they describe folliculitis of the large bowel, which was also noted in the cases recorded above, they do not mention the intense lymphoid hyperplasia at the ileocæcal valve. A possible explanation of this discrepancy is that the ileocæcal hyperplasia may be a feature of all those of the most fulminating cases, of which recorded above were examples.

Cultures were taken from the mucosa and contents of the bowel at several different levels and from the spleen in each case, but no organisms of any pathological importance were isolated. Failure to identify these from any of the cases may be attributable to the fact that in no case was the post-mortem examination made until the second day after death and in some cases not until the third. On account of this failure definite proof exists of the nature of the infecting ganism. The fact that *B. dysenteriæ* Sonne was lated from a sister who had been ill at the same time Case 4 makes it likely that in this case, at any rate, e infecting organism was of the Sonne type.

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[1] Charles, J. A., and Warren, S. H.: THE LANCET, 1932, ii., 626.

In 1926 Fraser, Kinloch, and Smith [2] reported an tbreak of dysentery in Aberdeen. In 1929 Charles d Warren [1] recorded a similar outbreak in wcastle. Various other writers have described aller epidemics. The attention of this depart nt was directed to the matter by an outbreak in the ldren's ward of the Royal Hospital in 1928, and e then there have been two smaller breaks. In spite of the attention t has been drawn to epidemics of illary dysentery in the last few rs, there does not appear to be eral recognition of the fact that disease is endemic in this country. is well recognised that in certain s of Shiga and Flexner infection toxæmia may be so everwhelming bring about a very early fatal ination. Charles and Warren recorded several cases of the but the Sonne bacillus has in the usually been regarded as only y toxigenic. Fulminating infec with rapid death due to *B. teriæ* Sonne, as in Case 4, does ppear to have been reported That death should occur as esult of a dysenteric infection ut the appearance of the cardinal om of diarrhœa, as in Cases 1 and 2, does eem to have been previously noted. This lity should be borne in mind in cases of death in children.

ost-mortem examinations on all the cases recorded de by Dr. S. C. Dyke, pathologist to the hospital, instance of Mr. J. T. Higgs, coroner for South shire, and of Mr. A. C. Skidmore, coroner to the of Wolverhampton. I am indebted to the coroners d for permission to publish the cases; to Dr. D. E. S. ham, of Upper Gornal, for material; to Dr. M. W. of Wolverhampton, for the history of Case 3; and Dyke for access to his notes and for advice and e.

A. M., Kinloch, J. P., and Smith, J.: Jour. Hyg., 453.

UBERCULOUS LARYNGITIS:

IMPORTANCE OF EARLY DIAGNOSIS

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RCULOUS laryngitis is pre-eminently a disease early diagnosis is all-important for successful nt. As it is, with exceptions so rare as to be le, a complication of pulmonary tuberculosis, it mally be recognised early if it is looked for; sh here to urge again, as I have done for over that all phthisical patients must have their inspected at regular intervals of a few months, or not they have symptoms referred to the d that they be sent to a laryngologist if this tion cannot be excluded with certainty. A ny consumptives suffer from hoarseness, or aracteristic weak voice; this is often merely t of asthenia, but these patients also have an unusual tendency to attacks of simple laryngitis, partly from the strain of coughing and partly from infection by secondary organisms in the sputum. On the other hand, a tuberculous lesion, perhaps in the posterior commissure or at the upper aperture, does not necessarily cause any symptoms in an early stage, and the disease can, therefore, neither be diagnosed nor excluded by the patient's symptoms alone, but only by laryngoscopy.

FIG. 1

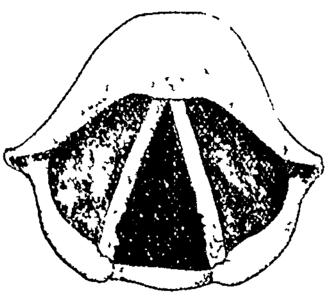

FIG. 5

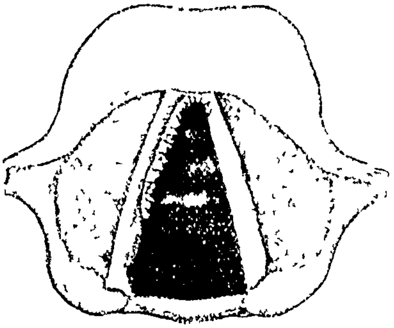

FIG. 1.—Tuberculous infiltration of vocal cords.
FIG. 5.—Epithelioma of vocal cord.

The illustrations are taken from "Diseases of the Larynx," by Harold Barwell, third edition, 1928. Oxford University Press.

Invasion of the larynx is usually the result of the entrance of tubercle bacilli contained in the sputum directly through the epithelium, and takes place most often in the neighbourhood of the vocal process where the mucosa is thin, closely applied to the cartilage, and liable to abrasion from coughing. The earliest lesions are, therefore, most often found at the level of the glottis and tend to spread from behind forwards along the vocal cord, or backwards to the posterior commissure. The upper aperture is seldom involved before the glottis, although not infrequently swelling of the arytenoids is the first lesion to attract attention, and the epiglottis is rarely attacked until the rest of the larynx has been extensively affected. It is often said that pallor is a characteristic feature of tuberculous laryngitis, but this is only partly true. Many consumptive patients are anæmic, and then the larynx, together with the other mucous membranes, will also be anæmic; in other cases the colour is normal or reddened from coughing and irritation by the sputum. Tuberculous granulations are usually pallid, the margins of ulcers are not hyperæmic, and arytenoid infiltrations are pale; but the unaffected portions of the larynx have no characteristic colour, and very often tuberculous infiltration on the cords, ventricular bands, and especially on the epiglottis, has a deeply congested red coloration. Granulations are typically of a soft, gelatinous appearance; when healing occurs there is but little fibrosis or deformity, in contradistinction to the lesions of syphilis or lupus, and stenosis causing dyspnœa is extremely rare.

CLINICAL VARIETIES

As any part of the larynx may be affected, the clinical picture is very variable, but for the sake of clearness five types may be described.

1. In the "chorditic" type the vocal cords are principally affected, and hoarseness and aphonia are early symptoms. The lesions are seldom symmetrical. Swelling and redness confined to one cord is not due to simple laryngitis; it may be caused by traumatism,

syphilis, or early epithelioma, but is highly suspicious of tuberculous laryngitis and should lead to a careful examination of the lungs. The posterior part of the glottis is chiefly affected; a pale shallow ulcer or erosion on the vocal process is very characteristic, or small soft granulations spreading from this region forwards along the cord (Fig. 1). In other cases the *process is more indurative*, and the cord becomes the seat of a firm pink nodular deposit, or again, may be converted into a broad red band of granulation tissue which adheres somewhat to its fellow on abduction. Ulceration is common, and one or both cords may be completely destroyed.

FIG. 2

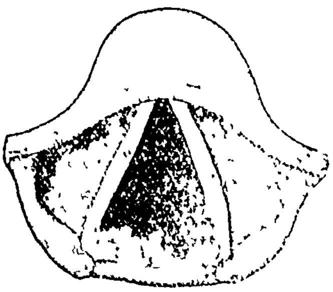

FIG. 6

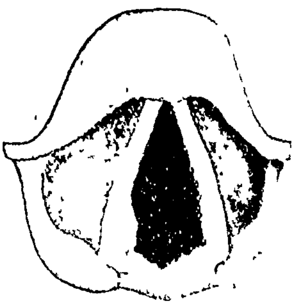

FIG. 2.—Interarytenoid granulations arising from a tuberculous ulcer in the posterior commissure.
FIG. 6.—Pachydermia laryngis.

2. In the "interarytenoid" form the posterior commissure is the region chiefly affected; there may be hoarseness or no symptoms at all, and the disease is usually of a chronic indolent type. The condition may resemble very closely the pachydermatous form of chronic laryngitis and, indeed, pachydermia has been considered by some authorities to be tuberculous. In pachydermia the thickenings are of a firm and solid appearance, of an opaque white or pale pink colour, symmetrically placed with a depression in the middle line of the posterior commissure, while the typically umbilicated swelling of the vocal processes is very characteristic (Fig. 6). On the other hand tuberculous granulations in this situation are irregular and asymmetrical, soft and semi-translucent, and are often but the edge, or the granulating base, of an ulcer seen foreshortened in the mirror (Fig. 2).

FIG. 3

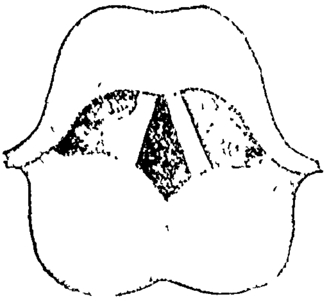

FIG. 7

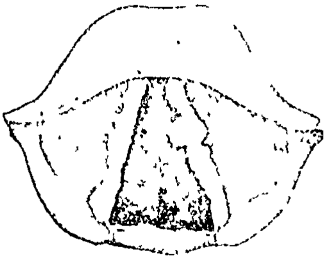

FIG. 3.—Tuberculous infiltration of the arytenoids.
FIG. 7.—Syphilitic infiltration of cords and ventricular bands.

3. In the "aryteno-epiglottic" type the disease, attacking the upper aperture, overshadows the lesions in the interior of the larynx. This form is the most easily recognised, and is the most serious on account of the massive infiltration produced, and because it causes the dysphagia which rapidly undermines the patient's resistance. The pyriform swelling of the arytenoids is distinctive; bilateral, except in the earliest stage, but not always symmetrical, the peculiar pale gelatinous infiltration is highly characteristic and is readily distinguished from the red transparent appearance of true œdema (Fig. 3). On the epiglottis the swelling assumes a sausage-shaped form, is red in colour, and ulceration occurs early on its laryngeal aspect; the swollen epiglottis and arytenoids form a picture which has been likened to a turban and is pathognomonic (Fig. 4).

FIG. 4

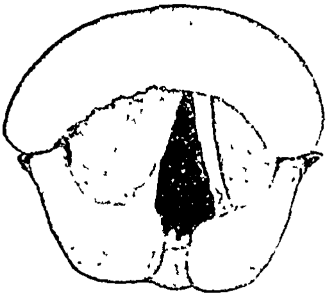

FIG. 8

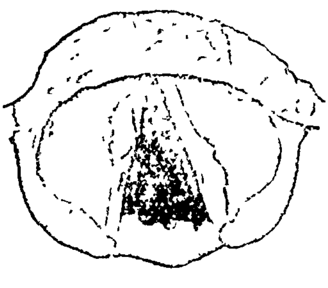

FIG. 4.—Tuberculous infiltration of epiglottis and arytenoids.
FIG. 8.—Syphilitic ulceration of cords and epiglottis.

4. There is a "lupoid" form of tuberculous laryngitis associated with a chronic fibrosing type of pulmonary phthisis; it is characterised by slow progress, little pain, and a tendency to heal with formation of scar tissue. The epiglottis is affected early, and the prognosis is relatively favourable. There is no sharp line dividing this affection from laryngeal lupus.

5 Miliary tuberculosis occurs in the larynx as a terminal affection in rapidly progressing phthisis. The typical miliary tubercles show up as grey points scattered on the bright red swollen mucosa and quickly break down into ulceration. The palate and fauces are often similarly affected, and the lesions are *intensely painful.*

DIFFERENTIAL DIAGNOSIS

The great majority of cases can be readily recognised by inspection, and it is not uncommon for the disease to be diagnosed in the larynx before it has been suspected in the lungs. The difficulty most often encountered by medical officers of sanatoria is to distinguish a simple laryngitis from early tuberculous invasion in a patient known to have phthisis; the error of mistaking catarrhal for tuberculous laryngitis is the less serious, for vocal rest and simple treatment will cure the condition and no harm will have been done. In the earliest stage tuberculous invasion may show little to distinguish it from simple catarrh, and it is therefore wise to treat an apparently simple laryngitis in a consumptive patient with respect and to be guarded in its prognosis. If one cord only be affected, lesion may be due to tubercle, syphilis, cer, or traumatism, but not to catarrh, and ther ulceration nor granulations occur in the latter. distinctions between typical tubercle and typical hilis are very marked. The tuberculous ulcer is w in growth, with ill-defined margin and no rounding injection, and the base is covered by e granulations of a yellowish speckled appearance ; healing contraction, scarring, and deformity are the slightest. In syphilis the superficial ulcer has rell-defined margin surrounded by a distinct zone of peræmia, and its base is smooth and flat ; the deep er is crateriform, with sharply punched-out, dermined, and often "mouse-nibbled" edge ; aling leaves a dense scar tissue with much contraction and deformity. Syphilis shows a predilection the epiglottis and, spreading from the fauces, acks its anterior aspect, whereas tubercle reaches is region from the interior of the larynx, so that eration affects the laryngeal surface and the rest the organ is usually already extensively involved ; philitic lesions, also, often coexist in the uth and pharynx. On the vocal cords the rule especially applicable that tuberculosis attacks e posterior, and syphilis the anterior, regions igs. 7 and 8).

Lupus in the larynx presents strong points of ntrast with the usual forms of tuberculosis. It tends spread from above downwards through the upper r-passages and attacks the epiglottis and upper erture before it reaches the interior of the larynx ; hen the larynx is affected, active or healed lesions e often to be found in the nose, palate, or fauces. differs from tuberculosis also in its painlessness, e nodular character of the infiltration, and the tendency to the production of dense scar tissue causing deformity and stenosis.

From malignant growths the diagnosis is not usually difficult, but a tuberculous infiltration limited to one vocal cord may imitate epithelioma very exactly. This form of tuberculous laryngitis is not very uncommon in elderly men ; the patient comes for examination on account of hoarseness, there is often no suspicion of phthisis, the physical signs may be very indefinite or may appear to be those of a simple chronic bronchitis, and tubercle bacilli may be very scanty or absent. There is no doubt that a number of cases of this form of tuberculosis have been diagnosed and treated as epithelioma. An opaque white appearance of the infiltration is very suggestive of malignancy (Fig. 5), while signs of involvement of the other cord and slight arytenoid or interarytenoid swelling point to tuberculosis. Delayed or sluggish movement of the affected cord is a sign of malignancy, but we must never wait for this sign for, when it is apparent, the disease has extended deeply and the prospect of successful operation is much diminished. These lesions are often too sessile to permit the removal of a portion for biopsy, and this should not be done in any case unless operation has been agreed to, should the examination prove malignancy. These cases constitute some of the most anxious and responsible of laryngological problems. The patient should be given a very complete examination, including skiagraphy of the chest, and, if progress is slow, as it usually is, may safely be watched for several weeks ; but it is better to perform a laryngo-fissure for an infiltration which proves to be tuberculous than to allow an epithelioma to pass beyond the reach of removal by this operation.

CLINICAL AND LABORATORY NOTES

PLACENTA PAPYRACEA AND FŒTUS PAPYRACEUS IN A BINOVULAR TWIN PREGNANCY

By KENNETH MAY, M.B. LOND.
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ON July 20th, 1931, a patient gave birth to a living ild and to a mummified fœtus at Lambeth Hospital. he was a multiparous woman who had never had ins. Her mother had one twin pregnancy.

Pregnancy was uneventful and labour was normal. The living child was healthy and weighed 6 lb. 10 oz. On examination of the membranes a second placenta was noticed (Fig. 1 A). This was roughly circular, having a diameter of 9 cm. It was flattened and fibrous, and completely separated from the living placenta. Alongside this compressed placenta was a thickened area which gave a sensation of egg-shell crackling, and by radiography the fœtal skeleton was revealed (Fig. 2). When the amnion had been stripped away a fœtus of about 16 weeks' gestation was seen. Its general lie gave the impression that it had been spread-eagled. The skeleton was complete save for one humerus which was found in the membranes. The vault of the skull appeared to have burst open. The following measurements are approximate: diameter of placenta, 9 cm. ; length of spine, 7 cm. ; vertex to rump, 11 cm. ; vertex to heels, 15 cm. ; average width, 4 cm. ; greatest thickness (scapular region) less than 1 cm.

The chief interest of this case lies in its rarity. G. C. Mosher,[1]

FIG. 1

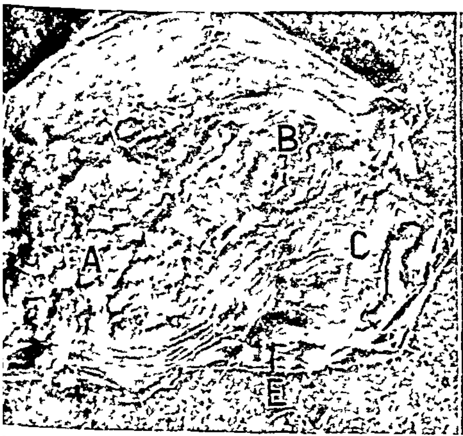

FIG. 2

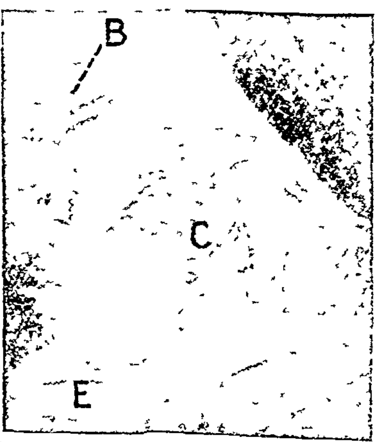

FIG. 1.—Photograph of the membranes, showing the flattened second placenta (A) and the fœtus. (B) is the jaw ; (C) the spine ; and (E) a leg of the fœtal skeleton.
FIG. 2.—Radiogram of the fœtus, for comparison.

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[1] Amer. Jour. Obst., 1918, lxxviii., 288.

in 1918, was able to collect but 88 cases of fœtus papyraceus associated with a living twin from the literature of the preceding 80 or 90 years. Of interest too is the fact that this was a binovular pregnancy, as a mummified fœtus is said to be commoner with uniovular pregnancies (R. Birnbaum [2]).

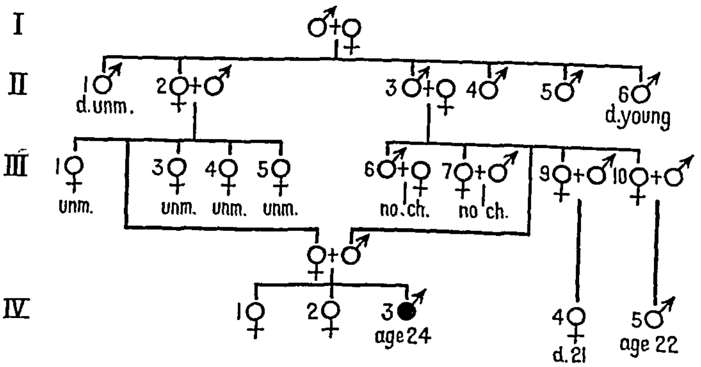
The mechanism of formation is as follows: death of one twin, retention, absorption of fluid, desiccation, compression by the growing twin. The factors influencing one placenta and twin to bring about their death are speculative. The cause of desiccation is also unknown, but its occurrence is presumably essential for retention of the fœtus.

I am indebted to Dr. G. F. Stebbing, who radiographed the specimen, and to Dr. T. McK. Robb, who photographed it and reproduced the radiograph.

A FORM OF BRACHYPHALANGY IN A COUSIN MARRIAGE

BY R. RUGGLES GATES, PH.D., LL.D., F.R.S.
PROFESSOR OF BOTANY IN THE UNIVERSITY OF LONDON

I CHANCED to observe recently a young man who appeared at first to be brachydactylous—i.e., with fingers having two instead of three phalanges, although his parents were normal. As this condition is always inherited as a Mendelian dominant, so far as known, the case was looked into further. The pedigree of this Warwickshire family is given in the accompanying figure.



The parents (III.2 and III.8), who were first cousins, as well as their son and daughter, were seen personally. The series of abnormalities in the son, who was 24 years of age and mentally bright, were quite unknown in any other member of this family through four generations. The second generation consisted of five sons and a daughter, number II.1 dying unmarried, while II.6 died young. The five daughters of II.2 all remained unmarried except III.2, mother of the proponent. From the marriage of II.3 to a normal woman there was a family of two sons and three daughters. The first son and daughter both married but had no children; III.8 was father of the proponent, III.9 had a daughter who died of pneumonia at 21, and III.10 has a son aged 22 years.

The abnormal son was the youngest of three children. IV.1 was apparently normal but died at birth owing to an abnormal presentation. IV.2, a daughter, is perfectly normal, and it now remains to describe the son. He was stout but dwarfed, about 4 ft. 7 in. in height.

Examination of his hands showed that, although his fingers were short and stubby, three phalanges were present in each finger. The basal phalanges were apparently of normal length, but the second and third phalanges were very short. The nails were very small on each finger, or in certain cases quite missing. The thumbs, however, were approximately normal, with large nails. Digit V on each hand was also rather strongly bent (crooked). He was also hexadactylous, a finger of probably full size, judging from the scar, having been removed from the ulnar side of each hand by surgical operation. Unfortunately it was not possible to make any more detailed examination nor to take radiograms. The feet were not examined, but there were stated to be five toes on each foot, with peculiarities similar to those of the fingers.

The inheritance of various kinds of short-finger abnormalities has been described elsewhere,[3] and the considerable recent literature of the subject has been reviewed by MacArthur and McCullough.[4] They describe a pedigree of "apical dystrophy" in which the first and second phalanges were more or less reduced or represented only by the epiphyses, and they point out differences between this condition and brachyphalangy, confining the latter term to those pedigrees in which there is absence or premature ossification of the epiphysis. The present condition resembles brachyphalangy in that the stature as well as the fingers are affected; but, on the other hand, the condition of the nails is like that found in apical dystrophy. Again, in previous pedigrees, the inheritance is that of a simple dominant, with rare cases of skipping a generation only in certain pedigrees, whereas in the present case the most probable interpretation is that the condition is a recessive brought out by cousin marriage.

Hexadactyly is also usually a dominant in inheritance, but in certain recent pedigrees it is clearly a recessive character in the Mendelian sense. The frequent association of two or more abnormalities in the same pedigree is of course well known. In MacArthur and McCullough's pedigree of apical dystrophy it was frequently associated with a variable condition of syndactyly and a well-marked tendency to doubling of the thumbs. The genetic evidence is as yet rarely sufficient to determine whether these conditions and their expression are due to genetically linked genes, the presence of modifying factors, or to single factors environmentally modified in their effects. On general genetic grounds, however, it seems highly probable that such conditions as hexadactyly and shortened phalanges are determined by separate genetic factors.

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[2] Malformations of the Fœtus. Translation by G. Blacker. London, 1912, p. 20.

[3] Gates, R. Ruggles: Heredity in Man, London, 1929.

[4] MacArthur, J. W., and McCullough, E.: Human Biology, Baltimore, 1932, iv., 179.

THE MANCHESTER HOSPITALS.—A poll of the municipal electors was taken at Manchester recently upon an omnibus Bill promoted by the city corporation. Among the proposals defeated were those for requiring the pasteurisation of milk coming into the city, excluding Certified milk and Grade A milk, and for controlling the sale of food by street vendors. The one resolution that was carried was that which provides for the acquisition of land adjoining the Manchester Royal Infirmary which may in future be necessary for the extension of the institution. Even for this there was a majority of only 1180 out of a poll of more than 43,000.—At the recent annual meeting of the Manchester Victoria Memorial Jewish Hospital, Mr. Nathan Laskie, the chairman, claimed that "there was no hospital in the country comparable to it, and that everything known to modern science had been secured." The new theatre is fitted with an apparatus for providing artificial rain on the glass roof in hot weather. The department for paying patients is about to be opened. Cubicles will cost £3 and private rooms £6 per week, inclusive of everything except specialist's fees. "The rooms and meals," it is stated, "will compare with the finest hotels in the land." The extensions have cost £15,000. Last year the hospital spent £567 upon road accident patients, and received £121. Salford Royal Hospital spent £651 in the same way, and received £98.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTIONS OF NEUROLOGY AND PSYCHIATRY

At a joint meeting of these two sections, held on Jan. 19th, the chair was taken by Dr. RISIEN RUSSELL, President of the section of neurology, and a discussion on the mental and physical symptoms of the

Presenile Dementias

was opened by Dr. MACDONALD CRITCHLEY. To the neurologist, he said, the presenile dementias were chiefly a problem of diagnosis. The majority of the deteriorations of late middle life were either syphilitic, arterio-sclerotic, or neoplastic. Smaller groups were the epileptic, the traumatic, and those associated with chronic neurological disorders, such as disseminated sclerosis and encephalitis. There remained a small group which could be separated by exclusion from all these: the true presenile dementias. The chief syndromes were Pick's disease and Alzheimer's disease. Pick had described his two cases in 1892; both had shown a curious psychical defect in life, and at autopsy a peculiar pathological change: symmetrical, localised, bilateral atrophies of the cortex. Only a few score cases had since been recorded. The onset was between the ages of 40 and 60, and females were more often affected than males. A phase of restlessness, agitation, and excitement was followed by dementia associated with focal symptoms, and finally by complete dementia and death. The course was usually slow. The focal manifestations were of all types, one of the commonest being sensory aphasia. Any part of the cortex might show atrophy, but the middle of the temporal lobe was the commonest site. The atrophy was a simple numerical reduction in the total number of cells, particularly in the three upper layers. The remaining cells showed some changes, notably a deposition of iron. The changes were not those of old brains, and did not resemble those of senile dementia. The ætiology was quite unknown. There was nearly always a family history of psychosis.

Alzheimer had described his disease in 1906; it appeared to be a little more common. The symptoms resembled those of Pick's disease, but the course was rather longer. Epilepsy was important. Remissions might occur. The pathological changes were like those of senile dementia, but much more intense and diffuse. "Alzheimer's tangle" appeared in other diseases as well as this. Senile plaques were very common. This condition might be a premature senility or a toxic phenomenon. Probably Alzheimer's and Pick's diseases were less rare than was believed. Diagnosis during life could only be made by exclusion; it was doubtful if the differential diagnosis could be made, except on the family history. Pick's disease had been demonstrated by encephalography, but the method was not to be recommended. The physical signs of the presenile dementias had received little attention, but careful examination would reveal interesting signs in the nervous system. The focal manifestations were extremely varied, as projection, commissural, and association fibres might be implicated. Other signs often present could not be correlated with precise lesions; these were the psychomotor disorders. The two chief types were the hypokinetic (immobility resembling Parkinsonism, slowness, resistance amounting to hypotonus and katatonia) and the hyperkinetic (restlessness and agitation, bizarre repetitive movements, grasping movements, and conveying everything to the mouth).

Dr. R. D. GILLESPIE offered a similar classification into (1) simple presenile dementias, (2) Alzheimer's disease, (3) Pick's disease, (4) presbyophrenia, and (5) the other conditions described by Kraepelin. He said that the subject had received inadequate attention. The histopathological changes found were too variable to form a basis for classification. The psychiatrist saw little of Alzheimer's and Pick's diseases outside institutions because the patients went to the neurologist as suspected intracranial tumour. A progressive failure of intellect and interest was the fundamental symptom of the simple group, and on this secondary intellectual, affective and conduct disorders might be superimposed. Symptoms on the symbolic level were important in differentiation. In the first group the intellectual symptoms persisted alone for some years. This group might be merely the early stage of one or other of the subsequent groups. On the whole, however, Dr. Gillespie thought there was a real group of this kind, as he had known the symptoms last for four or five years without any focal manifestations. The onset was so insidious that recognition was difficult at first. Slight deterioration and behaviour changes might set in as early as the late 'thirties. Little was known of the ætiology of any of the conditions; and there were no specific histopathological changes. Alzheimer's fibrillary changes, senile plaques, and Simchowic's granulo-vascular degeneration might be found in any group. There seemed to be a racial incidence.

Presbyophrenia was a confused concept, the term being differently used by different authors. According to one author, the leading symptom was a memory defect with confabulation, but for Bleuler the condition was equivalent to Alzheimer's disease. Kraepelin placed it among the senile dementias, and doubted whether it was a separate entity. The term could conveniently be retained for patients with retention defect and confabulation, but continued intellectual ability.

Dr. T. R. HILL selected only those dementias characteristic of the age-period 40-60, excluding late dementia præcox, gross organic disease, general paralysis, and toxic cases. There remained a number of types of dementia, chiefly falling into two groups: those associated with neurone degeneration, and those following cerebral vascular changes. These two might be compared with parenchymatous and interstitial syphilis. The first group included Alzheimer's and Pick's diseases, presbyophrenia, and early senile dementia. It was doubtful if there was any clearly defined condition to which the term "presbyophrenia" could be applied, unless it were to some anomalous cases of senile dementia. Alzheimer's disease had been described between the ages of 30 and 40, and once in childhood. Its average duration was four and a half years, but cases had been known to last 20 years. The definite familial incidence noted in Pick's disease had not been seen in Alzheimer's. Despite the uniform clinical picture, there was considerable individual variation. Aphasia, apraxia, and visual agnosia were less prominent and early than in Pick's disease. An incessant busyness seemed to fill the clinical picture at one stage. Positive symptoms were most marked, whereas in Pick's disease the negative symptoms were outstanding: inertness, lack of interest, and complacency. The course in Pick's disease was usually two to three years, though some cases had lasted 15 years. The one rule that seemed to regulate the focal atrophies was that the pre- and post-central and visuo-sensory areas should always be spared. Certain groups of cells seemed predestined to pathological change.

Arterio-sclerotic dementia was much commoner and more chronic. Focal symptoms were multiple, the aphasia being of sudden onset and sometimes transient. Insight was well preserved. The Pick's or Alzheimer's disease was brought to the doctor; the cerebro-arterio-sclerotic came himself, gave a clear account of his disease, and was anxious. Moreover, the nucleus of the personality was well preserved, but in Pick's or Alzheimer's disease it was profoundly shaken.

DISCUSSION

Dr. H. H. Devine said that restlessness in these cases might be due to bewilderment as a result of not being understood. When they were given a good environment their restlessness disappeared. It was a matter of very interesting speculation how much mind these patients had and to what extent they appreciated the environment, but were unable to express themselves.

Sir Robert Armstrong-Jones spoke of the social and family aspect of the problem. Cases of this kind were often not certified, but their affairs were placed in the hands of a receiver. The ordinary senile deterioration might be said to become pathological if there was marked loss of memory, marked change in personal habits or conduct, purposeless restlessness, or extreme fatuity and lethargy, or if there was a growing antipathy towards those formerly near and dear. The changes depended on the inherent durability of the neurone. It was doubtful if any form of insanity proper especially characterised senility, but the dementia of old age was quite characteristic. There was a slurred activity of thought, a diminished receptivity, and marked confusion, especially about relations. Old people often suspected those about them of plotting to rob them, and undesirable but plausible people were trusted instead of old friends. Here the protection of the Master in Lunacy was of inestimable value to the family. These people should not be allowed to make wills without the consent of the Master. Some of the symptoms related to the sexual instincts, the moral faculties being the first to go, and the cases might come before the courts. The commonest associated symptom was urinary trouble, often ending in fatal cystitis or pyelitis.

Dr. G. W. B. James related some case-histories of Alzheimer's disease. One woman had died after three and a half years. Three brothers had already died of the disorder, and the father had almost certainly had Pick's disease. The mother had died of cerebral hæmorrhage. An increasing number of patients in the presenium was seen with anxiety, inability to concentrate, fear of new situations, and an apparent dementia. These people had not previously suffered from anxiety.

Dr. R. M. Stewart said that the most striking feature of Pick's disease was the gross naked-eye change, and yet microscopically the change was limited to the supragranular cortex. Similar histological changes in aments did not produce such a gross modification. Atrophy of the corpus callosum might play a part in producing the physical signs.

Dr. Letitia Fairfield remarked on the rise of the suicide rate in both sexes between 45 and 55. This gave a serious aspect to mental symptoms at this age. She would like to know the connexion between the mental symptoms and the endocrine changes of the period. Clinically it was important to know how much to attribute to mental changes, and how much to temporary disturbances that would right themselves.

Dr. Critchley, in reply, said that the familial incidence of Alzheimer's disease had not been recognised. Alleged cases in young persons were probably something else. The more demented an old person was the more likely were senile plaques to be found, but their significance was still far from clear. The absence of radial or even retinal arterio-sclerosis did not exclude cerebral arterio-sclerosis, and this was by far the commonest cause of presenile dementia. Remissions and emotivity indicated arterio-sclerotic dementia. He had seen a case of Pick's disease with extreme precentral atrophy.

Dr. Gillespie, also in reply, agreed with Sir Robert Armstrong-Jones that the importance of diagnosis lay on the legal side.

Dr. Hill regarded the restlessness of Pick's disease as a loss of inhibition, the pathological process being less intense than in Alzheimer's disease. Any case which from the start had no insight was probably not arterio-sclerotic.

SECTION OF PHYSICAL MEDICINE

At a meeting of this section on Jan. 20th, with Sir Robert Stanton Woods, the President, in the chair, a discussion took place on

Physical Methods in the Treatment of Heart Disease

Dr. F. G. Thomson (Bath) said that although during the last ten years more attention had been paid to physical medicine, comparatively little had been given to its application to heart disease; indeed, physical methods seemed to have been in use more 25 years ago—chiefly in the form of effervescing baths, resistance exercises, and the like, as carried out at Nauheim. The vogue of Nauheim received a check from some devastating criticisms by the late Sir James Mackenzie. The speaker felt, however, that much more should be done by physical means for heart disease which in this country accounted for more deaths than any other disorder. With one or two exceptions, drugs had only a limited value in these disorders. Rest, duly regulated exercise, changes of environment, and, as far as possible, freedom from anxiety were all very important.

To estimate the true value of any therapeutic procedure, it was first necessary to consider its physiological effects on the normal person. Though the effect of baths on the heart was indirect it was very real, since the cutaneous and subcutaneous vessels contained at any one time a large proportion of the total body content of blood, and this superficial blood stream was readily influenced. With certain forms of bath the main effect was an active capillary dilatation, and an increased blood flow, with a desirable readjustment of pressure. The reflex result of this on the heart was to slow the beat and increase its propulsive force. If this bathing was combined with the drinking of appropriate waters the benefit might be increased. One effect was to reduce obesity, and hasten oxidation and elimination of waste products. Should any arterial spasm be present, this was much relieved or overcome by the baths. Similarly, the tone and quality of the heart muscle was increased. Electrotherapy seemed to be of but limited applicability to cardiac cases; indeed, the only form of electrical treatment which he had und to be of real value was that originally advocated y Sir Clifford Allbutt, the high-frequency current, hich that authority advocated for abnormally high lood pressure.

It was necessary to exclude from this treatment all ases of malignant endocarditis, however chronic or pparently latent; also all cases of recent rheumatic arditis. Old rheumatic heart affection which had become stabilised with time and in which there was a non-progressive mitral lesion was not necessarily precluded as unsuitable for physical methods f the myocardial state suggested the desirability of treatment on those lines: but he would not so treat cases having advanced myocardial disease, especially if there was concomitant renal disease. Indeed, in a general way, any case with a rheumatic history or having an obvious rheumatic lesion should be viewed with suspicion from the point of view of physical treatment. One must also rule out cases of advanced arterio-sclerosis, especially if the patient's condition suggested that there might be any vascular cerebral lesion. Another reason for exclusion was tachycardia when associated with hyperthyroidism.

Among conditions suitable for physical methods were, firstly, cases which were recovering from a toxic myocarditis which had followed on such an illness as influenza or tonsillitis, this toxin having definitely debilitated the heart muscle. He thought that the importance of infection in causing cardiac disability was not always sufficiently recognised. Another class of suitable case was the so-called D.A.H. (disordered action of the heart), the case of tachycardia which showed an exaggerated reaction to exertion, the case which showed the "effort syndrome." Next he mentioned functional conditions, as when extrasystoles were noted, and also dyspnœa due to gastro-intestinal disorders. The commonest of these latter were constipation and dyspepsia, possibly associated with chronic appendicitis or cholecystitis. Most of these patients showed, also, a heightened sensitivity, bordering on neurosis. Cases of myocardial debility and obesity were suitable for treatment by physical methods. And early cases of myocardial degeneration, which often were associated with hyperpiesis and symptoms suggestive of coronary insufficiency, were also very suitable.

A class of case in which spa and physical treatment was especially valuable was that showing chronic myocardial degeneration in an early stage. He instanced the case of the average middle-aged man who began to get somewhat breathless on exertion and said he felt a tightness across his chest when walking briskly uphill. He probably still ate heartily, and took less exercise than he should, and the veins on his face became prominent. The heart might be somewhat enlarged, and the aortic sound had an ominous ring, with a raised blood pressure. If untreated, such a man would go on to develop an irremediable form of myocardial degeneration. Almost certainly his metabolism was defective. Then oncoming obesity imposed a further serious handicap. Obesity was always a disability at this stage of life; it was said that in the obese the mortality from heart disease was two and a half times that among ordinary non-obese people. Once the coronary vessels and the myocardium had become the seat of advanced degeneration, no form of treatment could be of real benefit. This fact emphasised the lesson that treatment should be instituted as early as possible.

DISCUSSION

Dr. B. T. **Parsons-Smith** said it was usual to divide heart affections into two main groups—functional and structural or organic. In both kinds there was defective circulatory reserve; the circulatory mechanism of the heart suffered embarrassment, so that the train of symptoms known as the effort syndrome resulted. He considered that general massage and graduated exercises were very important in cases of heart affection. These increased the strength of the myocardium and improved the mechanism of the general circulation. Both, however, must be administered with great caution, and after careful examination of the patient. Whenever possible, results should be checked by tests of exercise tolerance. Great benefit sometimes followed deep breathing at the rate of seven or eight breaths per minute, for ten minutes at a time. Following this, he had noted a definite increase in the "R" wave on the electrocardiogram. Certainly deep breathing exercises had an improving influence on the mechanics of the circulation, as the auricular efficiency was enhanced, and in mitral stenosis the auricular waves were increased in voltage by this means.

Dr. T. F. **Cotton** referred to the discordant views held as to the effect of digitalis in cases of heart failure with a normal rhythm, and the important place which physical treatment held in cardiovascular conditions, deaths from which, recent statistics showed, were on the increase. Of all diseases of the circulatory system the most common was hypertensive heart disease, including arterio-sclerosis. It was important to consider particularly the cutaneous blood-vessels and their response to mechanical, thermal, and electrical stimuli. The essential vascular defect was usually structural, and a contributory cause was arterial spasm, and, often, a vasoconstriction from vasomotor influences. Following the action of the stimuli mentioned it seemed clear that a release of diffusible vasodilator substance took place. Even with intense diathermy the degree of heat penetration was but slight, and experience showed that electricity was not effective in controlling anginal pain. If it was sought to record the end-results of physiotherapeutic treatment in terms of blood pressure, not many therapeutic triumphs would be handed down. The relief of symptoms was not always dependent on the control of pathological processes.

Dr. **Geoffrey Holmes** (Harrogate) said his experience had been mainly in the treatment of heart disease by balneological methods. In some other diseases the heart condition was such that considerable judgment was required in modifying the bath treatment to suit it. In association with rheumatic conditions the vascular states fell into two groups: (1) valvular disease; (2) myocardial weakness and anæmia associated with the chronic infective types of arthritis. Sometimes one of these supervened on the other. The heart condition of a patient might be so poor that the bath treatment appropriate to his joints was impossible because of the state of his heart. In bath treatment much had to be left to the actual technician, and knowledge as to the amount of bath to give for certain states was only gradually being acquired. Following a short bath of a temperature of 99° to 104° F. there was an immediate rise in the systolic pressure, but, almost always, an increasing drop in the diastolic pressure. Even in the case of the normal person, indulging in a hot bath produced profound changes in the heart's action. The principal kinds he used were immersion baths, massage baths, packs, and poultices. Carbon dioxide baths definitely affected the basal metabolism, caused an increased flow of blood through the peripheral vessels and so relieved the heart. For some time he had been using sulphur baths aerated with CO_2. He considered the most important test of results to be the exercise tolerance; if this was improving there was little need to trouble about the blood pressure readings. He also was a believer in mustard liver packs for auricular fibrillation. These physical methods did not interfere with digitalis and other drug treatment of the patient, and a combination of the administration of vasodilators and physical methods was better than using either separately.

Dr. W. P. **Kennedy** said that deep inspiration prolonged diastole and increased the tone of the cardiac muscle, and a sequel of this was to stimulate the pulmonary venous flow, and to dilate the infundibular vessels.

Dr. R. **Timberg** said that in Sweden 50 years ago physiotherapeutic measures were largely practised. At about that date, Swedish people lived more well than wisely, and their comparative lack of exercise brought about a great prevalence of obesity. Physical methods beneficially influenced the systemic, particularly the pulmonary and the portal circulation. It was possible to regulate the heart to a great extent by stimulating the vagus. In his practice he attached great importance to deep breathing.

SECTIONS OF RADIOLOGY AND OBSTETRICS

A joint meeting of these sections on Jan 20th, with Dr. **Russell Reynolds**, President of the section of radiology, in the chair, was devoted to a discussion on the

Radiotherapy of Non-malignant Gynæcological Conditions

Dr. N. S. **Finzi** said that irradiation treatment of menopausal menorrhagia in patients over 38 was so certain that surgery was unjustifiable, in view of its increased risk and the long convalescence required. X rays and radium were equally effective; X rays were easier for the patient, especially if spread over three months, as in his own technique, but the result with radium was quicker. Examination under anæsthesia and diagnostic curettage were often advisable. The dose of radium used was 50 mg. in a 2·0 mm. platinum filter for 48 hours. In treating patients under 38 for menorrhagia there was a danger of menstruation returning, and if pregnancy occurred the fœtus might be deformed, microcephaly being the commonest abnormality. Small doses of X rays might be used for restoring normal menstruation in young patients. X rays could be used in uncomplicated cases of fibroids, with patients over 38, even when the uterus was very large; he had successfully treated one case in which the uterus was up to the ensiform cartilage. Younger patients with severe heart disease or anæmia were also suitable subjects if surgery was contra-indicated. Radium might be used in similar cases, especially when examination under anæsthesia was advisable. Surgery was indicated where the patient was under 38, where the fibroids were degenerate or calcified, subperitoneal pedunculated, completely or partially polypoid, or purulent or gangrenous, or where there were pyosalpinx or old tubo-ovarian inflammation, malignant degeneration, or severe compression symptoms. For endometrioma full doses were necessary; deep X ray treatment should be given as for carcinoma. Cases of pelvic inflammation responded to very small doses of penetrating X rays.

Mr. **Malcolm Donaldson** said that in uterine hæmorrhage examination under anæsthesia was essential, except in cases of pure menorrhagia, which might be treated by X rays. He emphasised the necessity of educating the public to appreciate the importance of an exact diagnosis made by curettage in cases of excessive or irregular menopausal hæmorrhage. In favour of X rays was the absence of an anæsthetic and lying-up. Under anæsthesia carcinoma and inflammatory conditions could be excluded, and radium was then preferable. In addition, application of radium to the cervix might be found to diminish the incidence of carcinoma. This was supported by experiments on the production of tar cancer in normal and irradiated animals. Fibroids might be treated by radium or X rays if the uterus was not much larger than a fœtal head, subject to the contra-indications mentioned already. Some fibroids remained the same size and some diminished, the result probably depending on the amount of muscle present. The effect of irradiation was definitely on both ovary and uterus. *Small doses of radiations* were beneficial in tuberculosis of the cervix or vagina. In women under 40 the treatment of irregular hæmorrhage and menorrhagia by radiological methods was very rarely advisable.

Dr. F. **Hernaman-Johnson** said that X rays probably also prevented carcinoma. Radium was more liable to cause vomiting and upset the patient. Women were more likely to come for treatment if they know it can be given without an anæsthetic. X rays very seldom failed in women over 40. Menopausal symptoms were not worse than at the normal menopause, and sex-life appeared to be unaltered.

Mr. **Norman White** gave the results of 323 cases treated with radium at University College Hospital. The most satisfactory dose to produce amenorrhœa, he said, was 50 mg. for 60 hours, with screenage equivalent to 1·5 mm. platinum. Patients under 35 were rarely suitable for radium treatment; there was only a 50 per cent. chance of decreasing the loss at the periods, short of causing permanent amenorrhœa. The menopause in young patients was liable to be associated with severe neurasthenia, and three cases of mild Graves's disease had occurred among eleven cases of radium menopause under the age of 35 Radium treatment seemed to be without risk when used in suitable cases. No case of carcinoma of the uterus had been found after radium treatment in this series.

Miss B. E. **Turner** quoted statistics of 55 cases treated at the Royal Free Hospital.

Dame **Louise McIlroy** said that curettage and microscopical examination of curettings were essential when radiological treatment was undertaken for uterine [illegible] logists should try to find a [illegible] menstrual loss without producing amenorrhœa.

Dr. **Elizabeth Hurdon** said that 96 per cent. of cases of menorrhagia were cured by small doses of radium and she did not think large doses should be given as a routine; the treatment could be repeated in the few cases of failure.

The **Chairman** emphasised the necessity of stating what screen was used in radium treatment. He drew attention to the fact that after treatment the patient commonly had an excessive period, and there was no indication that the treatment had failed.

MEDICAL SOCIETY OF LONDON.

Anæsthesia During Labour

At a meeting of this society on Jan. 23rd, Sir John Broadbent, the President, was in the chair, and a discussion took place on anæsthesia during labour.

THE GYNÆCOLOGIST'S POINT OF VIEW

Mr. Leslie H. W. Williams said that labour was painful for many hours, particularly so at two periods: (1) when the first stage was just completed and the head was beginning to distend the vagina; (2) at the time of delivery through the vulva. For the relief of pain, therefore, something was needed which would act over a long period and could be reinforced at will. The ideal means of relieving the pain of labour still remained to be discovered. Admittedly gas-and-oxygen was the best anæsthetic for the last two or three hours of childbirth, but efforts were still being made to find a drug more powerful than chloral and bromide for the first stage. Some patients became wildly excited, even maniacal, under some of the vaunted new drugs, and exhibited other signs of poisoning, while others seemed to have little relief from pain. In recent years gas-and-oxygen had been widely advocated, especially by anæsthetists, but they were considering only the second stage, since this anæsthetic could not serve throughout labour.

The method practised by *Gwathmey*, of which Mr. Williams's own experience was very slight, seemed to have great possibilities.

As soon as the patient began to show real distress, gr. 1/6 of morphia dissolved in 2 c.cm. of a 50 per cent. magnesium sulphate solution was given intramuscularly, and during the first stage two further injections of the mag. sulph. solution were given alone; this deepened and prolonged the action of the morphia. Just before the descent of the head into the pelvic brim, rectal injection of a mixture consisting of ether and olive oil, with a small amount of quinine and alcohol, was given. Sometimes a smaller dose of this mixture could be given later.

The method seemed to merit a much more extensive trial in this country.

Twilight sleep deserved a wider use. Its employment was fairly usual in maternity hospitals for inert uterus or excessive first-stage pains with but little dilatation of the cervix. All Mr. Williams's private cases were given some modification of twilight sleep. The following was a modified scheme of administration of scopolamine and morphia which had undoubted value.

At the first sign of distress the mother was given gr. ¼ of morphia and gr. 1/100 of scopolamine, and she subsequently received gr. 1/200 scopolamine at two-hourly intervals for two days, and later gr. 1/300 at three-hourly intervals if required. This treatment could be maintained until the actual expulsion of the child, but his own practice was to stop the scopolamine at the beginning of the second stage and continue with intermittent chloroform, gas-and-oxygen being, however, even better.

It was important, in every case so treated, to ensure that the woman was not left alone; the obstetrician should be present, if possible, the whole time, and a nurse must always be at hand to relieve thirst. Occasionally patients so treated became hysterical, even maniacal, and when that occurred the scopolamine must be stopped. A further disadvantage was that some of the children born under this régime were in some degree asphyxiated. This asphyxiation, however, did not last long if careful provision of an airway was made.

The use of the *barbiturate* preparations by the intravenous route he considered inapplicable in obstetrics, since, apart from their well-known dangers, the duration of their analgesia was not sufficient. Nor did he like drugs, like avertin, per rectum, not only because their retention was difficult, but because their use militated against a clean confinement. Barbiturates given by the mouth showed an extraordinary variability of effect. Nembutal was now put up in grs. 1½ capsules, sodium amytal in grs. 3 capsules. He had frequently given 7 or 8 capsules in the course of a labour. The maximum safe dose, however, was considered to be 4 capsules. Another method was to give nembutal and chloral hydrate, but he had not observed advantage from this in his practice. However well nembutal may have acted in the early stages of labour, some other anæsthetic needed to be added for the second stage.

For this second stage *gas-and-oxygen* was far and away the best, as it had no adverse effect on the uterine contractions, and the baby was never affected. Second in value at this stage he placed *chloroform* when the foregoing was not available, and often it was not because of the cumbersome apparatus necessary for its administration. By means of a Junker apparatus the nurse could keep the patient in a state in which she was unconscious of any suffering. Chloroform could also be administered on an open mask or by means of 20 minim capsules (Brisettes), which were crushed and slipped inside the lint covering the ordinary anæsthetic mask. Six to ten of these capsules were used in the course of an hour. In operations for the actual extraction of the child the anæsthesia should be allowed to diminish to as light a degree as possible, so as to permit of the resumption of the uterine contractions.

THE ANÆSTHETIST'S POINT OF VIEW

Dr. Douglas Belfrage said that he would speak only of those methods of which he had had personal experience. For the second, expulsive, period of labour the choice must be made from the anæsthetic drugs in general use: ether, chloroform, and gas-and-oxygen. The latter was the only one which fully answered the requirement of abolishing pain without interfering with the uterus or injuring the child. The other two—especially chloroform—inhibited the uterine muscle when used in sufficient concentration adequately to relieve pain. The objection to gas-and-oxygen anæsthesia was the cumbersome apparatus; efforts were now being made to greatly lessen this disadvantage, and apparatus weighing not more than 50 lb. had been constructed.

It was more difficult to secure to the woman a first stage free from pain. Theoretically this could be done either by making sure she felt no pain, or by ensuring that she remembered nothing of it afterwards. He considered that in this stage morphine, omnopon, and scopolamine had stood the test, also the barbitones and avertin. Morphine-scopolamine and omnopon-scopolamine he believed had now settled into their place in the anæsthesia of labour. The dangers and disadvantages of prolonged twilight sleep were now well recognised. Of pernocton he had had an unfortunate experience because of the amount of restraint the patients required, though their complete obliviousness of what had transpired was unquestionable. Nembutal he regarded as a perfectly safe drug when rightly handled. When used alone, even when morphia had been given beforehand, there was considerable restlessness and struggling, but if O'Sullivan and Craner's technique was followed this tendency was almost absent. The first dose consisted of grs. 3 of nembutal, followed ten minutes later by grs. 30

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Radiotherapy of Non-malignant Gynæcological Conditions

Dr. N. S. **Finzi** said that irradiation treatment of menopausal menorrhagia in patients over 38 was so *certain that surgery was unjustifiable, in* view of its increased risk and the long convalescence required. X rays and radium were equally effective; X rays were easier for the patient, especially if spread over three months, as in his own technique, but the result with radium was quicker. *Examination under anæsthesia and diagnostic curettage* were often advisable. The dose of radium used was 50 mg. in a 2·0 mm. platinum filter for 48 hours. In treating patients under 38 for menorrhagia there was a danger of menstruation returning, and if pregnancy occurred the fœtus might be deformed, microcephaly *being the commonest abnormality.* Small doses of X rays might be used for restoring normal menstruation in young patients. X rays could be used in uncomplicated cases of fibroids, with patients over 38, even when the uterus was very large; he had successfully treated one case *in which the uterus was up to the ensiform cartilage.* Younger patients with severe heart disease or anæmia were also suitable subjects if surgery was contra-indicated. Radium might be used in similar cases, especially when examination under anæsthesia was advisable. Surgery was indicated where the patient was under 38, where *the* fibroids were *degenerate* or calcified, subperitoneal pedunculated, completely or partially polypoid, or purulent or gangrenous, or where there were pyosalpinx or old tubo-ovarian inflammation, malignant degeneration, or severe compression symptoms. For endometrioma full doses were necessary; deep X ray treatment should be given as for carcinoma. Cases of pelvic inflammation responded to very small doses of penetrating X rays.

Mr. **Malcolm Donaldson** said that in uterine hæmorrhage examination under anæsthesia was essential, except in cases of pure menorrhagia, which might be treated by X rays. He emphasised the necessity of educating the public to appreciate the importance of an exact diagnosis made by curettage in cases of excessive or irregular menopausal hæmorrhage. In favour of X rays was the absence of an anæsthetic and lying-up. Under anæsthesia carcinoma and inflammatory conditions could be excluded, *and radium was then preferable. In addition,* application of radium to the cervix might be found to diminish the incidence of carcinoma. This was supported by experiments on the production of tar cancer in normal and irradiated animals. Fibroids might be treated by radium or X rays if the uterus was not much larger than a fœtal head, subject to the contra-indications mentioned already. Some fibroids remained the same size and some diminished, the result probably depending on the amount of muscle present. The effect of irradiation was definitely on both ovary and uterus. Small doses of radiations were beneficial in tuberculosis of the cervix or vagina. In women under 40 the treatment of irregular hæmorrhage and menorrhagia by radiological methods was very rarely advisable.

Dr. F. **Hernaman-Johnson** said that X rays probably also prevented carcinoma. Radium was more liable to cause vomiting and upset the patient. Women were more likely to come for treatment if they know it can be given without an anæsthetic. X rays very seldom failed in women over 40. Menopausal symptoms were not worse than at the normal menopause. and sex-life appeared to be unaltered.

Mr. **Norman White** gave the results of 323 cases treated with radium at University College Hospital. The most satisfactory dose to produce amenorrhœa, he said, was 50 mg. for 60 hours, with screenage equivalent to 1·5 mm. platinum. Patients under 35 were rarely suitable for radium treatment; there was only a 50 per cent. chance of decreasing the loss at the periods, short of causing permanent amenorrhœa. The menopause in young patients was liable to be associated with severe neurasthenia, and three cases of mild Graves's disease had occurred among eleven cases of radium menopause under the age of 35 Radium treatment seemed to be without risk when used in suitable cases. No case of carcinoma of the uterus had been found after radium treatment in this series.

Miss B. E. **Turner** quoted statistics of 55 cases treated at the Royal Free Hospital.

Dame **Louise McIlroy** said that curettage and microscopical examination of curettings were essential when radiological treatment was undertaken for uterine hæmorrhage. Radiologists should try to find a method of diminishing menstrual loss without producing amenorrhœa.

Dr. **Elizabeth Hurdon** said that 96 per cent. of cases of menorrhagia were cured by small doses of radium and she did not think large doses should be given as a routine; the treatment could be repeated in the few cases of failure.

The **Chairman** emphasised the necessity of stating what screen was used in radium treatment. He drew attention to the fact that after treatment the patient commonly had an excessive period, and this was no indication that the treatment had failed.

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Dr. G. **Carmichael Low**, the President, took the chair at a meeting of this society held at Manson House on Jan. 19th, when Dr. F. M. **Burnet** read a paper on recent work on the Biological Nature of Bacteriophages.

He said that the active agent was particulate and varied considerably in size—between 10 and 60 μ—though the particles of a given phage were nearly always uniform in size, and the size was independent of the organism on which the phage was grown. The rate of inactivation by heat changed with the temperature in a fashion characteristic of the heat denaturation of proteins. The influence on heat inactivation of solutions containing different proportions of bivalent and monovalent kations indicated that the surface condition of phage was similar to that of bacteria and other living organisms, and that phages, even when purified by the elimination of bacterial antigens, were capable of inducing the formation of specific antibodies. All the evidence was therefore compatible with the view that the phage particles were definitely organised bodies reproducing themselves true to type, and largely composed of protein. Some of the large-particle phages strikingly resembled minute bacteria in their behaviour. True agglutination of washed phage particles could take place; non-multiplying bacteria could be coated with phage and then agglutinated specifically with antiphage serum, and in the course of phage multiplication a specific soluble substance was produced which was separable from the phage particles by ultra-filtration, and could also react with the specific antibody of the phage serum. The problems of lysogenicity had great theoretical interest. Certain quite characteristic bacterial strains could, by certain manipulations, be used to induce typical lysis either of the homologous strain or of another. Apparently normal strains of coliform bacteria had regularly produced a phage lysing Shiga-dysentery cultures. Lysogenicity had been found surprisingly common in salmonella cultures, and a large number of phage types could be obtained from cultures of a single species. Lysogenicity was not an essential characteristic of the species. The relationship demonstrated could only exist between two sets of biological entities when their evolution and differentiation had been essentially independent. In other words, the phenomena of lysogenicity indicated that bacteriophage formed a group of independently evolved living organisms capable of entering into parasitic or symbiotic relationships with bacteria. Dr. Burnet concluded, therefore, that bacteriophages were independent micro-organisms, viruses which were obligate parasites or symbionts of bacteria. He suggested a classification according to particle or plaque size, serological character, and resistance type.

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Prof. J. C. G. **Ledingham** criticised Dr. Burnet's theory. He knew of no crucial experiment that would prove it. Prof. J. Bordet had welcomed Dr. Burnet's work as supporting his own view that the phage was a manifestation of transmissible autolysis. Prof. Bordet had laid stress on the lysogenic properties in his Croonian lecture a year and a half ago, and had said that it was very difficult to eradicate them. On Dr. Burnet's showing the organism must have a virus, and possibly two or three viruses, associated chloral hydrate in lemonade, the drink being taken very slowly, otherwise vomiting might ensue. Two hours later nembutal grs. 1½ and a like quantity of chloral hydrate was given. Usually the labour had proceeded almost to the end by the time the second dose had been acting for an hour or so, so that the administration of gas-and-oxygen or chloroform for a short time was all that was needed. He had not noted, when using this means, that labour had been protracted particularly, nor had any of the babies been born with dangerous asphyxia. Among the chief drawbacks were the great variation in the action of the nembutal as between patient and patient, and the tendency to sickness of the mother. Avertin had its place in obstetrics; its action was the same as when it was used as a pre-operative narcotic and as safe, provided that the patient was not left alone. The dose for obstetrics should be three-quarters of the pre-operative dose, and should be given to primiparæ when the cervix was three-quarters to fully dilated, and to multiparæ at about half the full dilatation. In 20 cases he had had no difficulty about the rectal administration or retention of avertin. He had not met anyone who had had personal experience of the Gwathmey method.

THE PRACTITIONER'S POINT OF VIEW

Dr. GLYN HUGHES discussed the relative merits of the various forms of anæsthesia used in labour from the standpoint of the general practitioner, especially in view of the fact that half the labours of the country were conducted by midwives It was necessary to differentiate between practitioners working in London and those practising in out-of-the-way country districts. He did not advocate twilight sleep, as constant attention and supervision were required, and the child might be born apnœic But the modified method of giving smaller doses of morphia and scopolamine as a preliminary sedative could be very helpful. Pernocton and nembutal were uncertain in their effects, especially when given by the mouth, the only practicable method in obstetrics. Moreover their use was always followed by some degree of restlessness, which might be a serious handicap, and certainly wearied the patient and diminished the patient's expelling power. This restlessness could be to some extent diminished by giving beforehand an injection of omnopon and scopolamine. To have a child born in a condition of apnœa was always a worry to the practitioner. The difficulty in regard to paraldehyde was one of rectal retention; it was necessary to hold the buttocks together, a difficult matter in labour. Avertin he had never used in obstetric practice; its action was too short-lived to be of value to the general practitioner He agreed that all the drugs mentioned might be useful in institutions Gas-and-oxygen was of immense value, but was difficult to administer. Dr. Hughes was wholly in favour of chloroform as against ether, except where contra-indicated, as in toxæmia, hæmorrhage, and exophthalmic goitre. Ether introduced the risk of bronchitis Chloroform was particularly suitable for women who clamoured for some form of anæsthesia from the start Sleep and rest were a valuable preliminary to labour, and did much to prevent uterine inertia, shock, and post-partum hæmorrhage.

A FOOL-PROOF JUNKER

Dr. Z. MENNELL remarked that the expert obstetrician, the expert anæsthetist, and the general practitioner had been heard in the discussion, but not the midwife Granted that gas-and-oxygen was the ideal anæsthetic for labour, the ideal was unattainable in this country under existing circumstances. The result of a long experience in both practice and teaching was that chloroform, given to the obstetrical degree in normal labour, was the only feasible anæsthetic. It was a matter of general agreement that every effort should be made to ease the suffering associated with labour and to help the women at least to forget what they had gone through. By normal labour he meant one in which there was reasonable hope that the woman would deliver herself unaided; and by chloroform anæsthesia to an obstetrical degree he meant a light anæsthesia, really an analgesia, causing only partial amnesia And it should be intermittent. The degree of anæsthesia should be deepened slightly at the end He did not think the barbiturates were to be recommended in this class of work. Twilight sleep had been tried out in a long series of cases at St. Thomas's and all he would say about it was that hyoscine and morphia had their uses. Avertin he regarded as too uncertain to be useful, and if rectal anæsthesia was needed, some safer drug should be chosen The synergistic anæsthesia, or Gwathmey method, seemed to him to be complicated. He considered that paraldehyde, freshly mixed and given per rectum was one of the safest of analgesics; it greatly aided the earlier stages of labour and rendered the use of chloroform easier; it was not necessary to use large doses. Recently there had been talk of capsules of chloroform being issued to midwives, and in this he saw possible danger; it should be possible to produce a fool-proof Junker inhaler, and he showed one which he had nearly completed, which it was proposed to register. He thought candidates for the C.M.B. certificate should be required to show familiarity with it. Anæsthetists should face the fact that a large number of patients were delivered single-handed, and set to work to determine the safest form of analgesia. His own preference was for paraldehyde, with or without chloroform vapour from a Junker.

THE NEED FOR CAUTION

Sir WILLIAM WILLCOX warned the profession with regard to the use of certain drugs for producing anæsthesia, whether during labour or otherwise. Nembutal was a new drug, and the dangers of its use only became known after bitter experience It was the most powerful of the barbituric acid group from the toxic point of view, exceeding considerably the toxic power of luminal. Nembutal poisoned the kidney cells, stopped their secretion, and in consequence suppression of urine might occur. He knew of four cases of such suppression following its use which ended fatally, though the doses were smaller than those mentioned by Mr. Leslie Williams. Considerable hesitation was necessary before nurses were entrusted with a drug of such potency. Drugs of this class killed by causing what was known as veronal pneumonia, which he had described in 1913. No practitioner could keep abreast of the chemical and biochemical advances constantly going on, and he had to rely on information received through reputable channels; and the need for caution was all the greater in view of the large number of manufactured emanations for which many virtues were claimed. Sir William agreed with the principle laid down by Dr. Mennell, and urged the need to remember that a small dose could be doubled at will, but a big dose could not afterwards be withdrawn; gr. 1/6 of morphia and gr. 1/200 of scopolamine would harm no one.

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Dr. A. FELIX objected to Dr. Burnet's theory on the ground that, since both the phages and the bacterial antigen were colloids, they were not separable by a simple procedure like washing, and that the antigen, which could be adsorbed to the phage particles, might be responsible for the production of antibodies, which appeared to be specific since they did not react to the original antigen of the organism.

Prof. G. S. WILSON supported Dr. Burnet, saying that it was impossible to devise a crucial experiment to settle such a complicated biological problem. The question could only be settled by accumulated evidence. He asked whether lysogenetic strains had been found amongst organisms that had not been in contact with the intestinal canal or sewage. In bacterial cultures it was almost necessary to assume that every organism was infected with a virus, or else that there were special cells which were more or less susceptible to the virus or phage, and in which it could multiply to a certain extent without bringing about complete lysis of the organism. He asked whether Dr. Burnet believed that the association between the phage and the organism was in the nature of a symbiosis.

Prof. WARRINGTON YORKE reminded critics that, unlike a politician, a scientist had a right to change his mind.

Colonel MACKIE, in reply, said that the results of the two large field experiments in India had been wholly satisfactory from the point of view of those workers who had conducted them. Feeling at Calcutta was sharply divided for and against the efficacy of phage. The results of mass treatment in India had appeared extremely good, but an equal decline in incidence had taken place in neighbouring (control) districts and might have been due to an inter-epidemic period. There was some evidence that where bacteriophage had been given as a curative agent to members of households at epidemic times, there had been a notable reduction in incidence, but in some small local epidemics there had been no such reduction. The advocates of phage held that some races of it were still undiscovered and that therefore the mixture was not complete. A large-scale experiment should, he said, be done on herd and laboratory animals; human epidemics introduced so many variable factors that statistics based on them would long remain untrustworthy.

REVIEWS AND NOTICES OF BOOKS

The Early Diagnosis of the Acute Abdomen

Sixth edition. By ZACHARY COPE, B.A., M.D., M.S. Lond., F.R.C.S. Eng., Surgeon to St. Mary's Hospital, Paddington. London: Humphrey Milford, Oxford University Press. 1932. Pp. 247. 10*s*. 6*d*.

THIS useful book has reached a sixth edition. As a guide to student and practitioner in the early diagnosis of acute abdominal conditions it does all that a book can do to support clinical opinion with authority, and to remind the unwary of certain pitfalls. Mr. Cope maintains the position he has previously adopted in regard to the time of operation for acute appendicitis. He says "the view is accepted by most surgeons of experience that every case of acute appendicitis should be operated on within the first 24 hours from the onset or as soon after as is possible." A reiteration of this dogmatic teaching by a surgeon of Mr. Cope's experience would bring comfort to those who have been stirred by doubts on this difficult problem, had it not been qualified by his remark at a discussion at the Royal Society of Medicine that "to say that immediate operation should always be undertaken is not to give the clinician any credit for judgment." In the chapter on acute abdominal disease with genito-urinary symptoms we could find no mention of the cases of diverticulitis which have genito-urinary symptoms as their most striking feature. The chapter on diseases simulating the acute abdomen covers the ground fully, but, while cardiac failure, pericarditis, and angina pectoris are discussed from the point of view of differential diagnosis, no mention at all is made of coronary thrombosis, which is certainly the cardiac conditio most liable to be mistaken for an acute abdomina catastrophe.

This book should certainly be included in the library of every practitioner.

Diseases of the Thyroid Gland

Diagnosis and Treatment. By GEORGE CRILE an Associates. Edited by AMY F. ROWLAND. London W. B. Saunders Co., Ltd. 1932. Pp. 50 32*s*. 6*d*.

ANY work emanating from the Cleveland Clini on the subject of thyroid disease is sure of a welcom since the originality and enthusiasm of Dr. Cri and his co-workers arouse interest even if they d not always induce agreement. This book consis of a series of articles on the various aspects of thyroi disease by 24 contributors, and as is inevitable when large team collaborate, there is considerable inequalit in the merits of some of the articles. One of t best is the chapter on iodine and the thyroid glan by George Crile, Jun. This admirable summa of the subject has a good bibliography, and written in a pleasing style. A chapter on carl hydrate metabolism in hyperthyroidism, by Hen J. John, is a clear review of this much discus subject, and contains suggestive observations. D George Crile's chapters on such diverse matter the rôle of the thyroid gland in the energy syste endemic goitre, the adrenal factor in hyperthyroidis and thyroglossal fistulæ are written in his usu attractive way, and are full of stimulating ide One of the least satisfactory chapters is that routine technique of thyroidectomy, by Robert S. Dinsmore. To the inexperienced thyroid surgeon it can hardly make the steps of the operation clear, and to an expert it will seem full of dogmatism on controversial points. The book is well illustrated and is admirably produced.

Anatomy of the Brain and Spinal Cord

Second edition. By WILLIAM W. LOONEY, A.B., M.D., Professor of Anatomy, Baylor University College of Medicine, Dallas, Texas. Philadelphia: F. A. Davis Company. 1932. Pp. 370. $4.50.

THIS exposition of the most complicated branch of anatomy is planned for the medical student. The bed-rock of the subject is simply and dogmatically displayed along conventional lines; the blending of a certain amount of physiology with the anatomy is well done and increases the teaching value of the book. The diagrams and other illustrations in the text are adequate, and the print and paper are admirable. An unusual and practical feature is the short appendix, wherein a series of clinical cases are described to show how neurological diagnosis must rest upon accurate localisation of the lesion.

While the subject matter is sound enough, it might be brought more up to date in one or two respects without undue elaboration. For example, modern work on the localisation of the sympathetic centres in the hypothalamus is too important to be omitted from any text-book, however elementary. The book will be used with appreciation by students still in the dissecting-room as well as by their seniors revising for final examinations.

Medicinal and Poisonous Plants of Southern Africa

By JOHN MITCHELL WATT, M.B., Ch.B. Edin., Professor of Pharmacology in the University of the Witwatersrand, Johannesburg; and MARIA GERDINA BREYER-BRANDWIJK, Phil. docta. (Utrecht), Research Worker in Phyto-chemistry in the Department of Pharmacology in the University of Witwatersrand. Edinburgh: E. and S. Livingstone. 1932. Pp. 314. 25s.

WHILE in Europe most popular folk-remedies have been proved by pharmacological research to be useless, enough have been shown to be of value to warrant the systematic examination of those employed in other parts of the world. In Southern Africa, as is pointed out in the preface to this book, Bushmen, Hottentot, Bantu, and European have contributed to folk-medicine from the great wealth and variety of the flora of that country. Much of this lore is rapidly disappearing before the advancing tide of civilisation, with its synthetic medicines, and it is a matter of urgency that it should be sifted and placed on record before it finally disappears. This important work has been executed here in a careful manner. The authors have aimed at collecting all available information on the medicinal uses, chemical composition, pharmacological effects, and human and veterinary toxicology of the flora of Southern Africa, and have produced an excellent work of reference on the medicinal and poisonous plants of that country. The book provides extensive bibliographies and beautiful illustrations, some of them in colour, and the four elaborate indices, based on the botanical names of plants, the common names from European languages, the native names, and the names of active principles, make for easy reference. The authors are to be congratulated on their scholarship; they have supplied information difficult to get, which may be of importance in leading to the greater utilisation of the natural products of a sub-continent.

The Treasury of Human Inheritance

Nettleship Memorial Volume. Part V. (concluding section, pp. 425–555, with 18 plates). *On Some Hereditary Structural Anomalies of the Eye and on the Inheritance of Glaucoma.* By JULIA BELL, M.R.C.P., Francis Galton Laboratory for National Eugenics. London: Cambridge University Press. 1932. 36s.

IN this concluding section of the Nettleship Memorial Volume, Dr. Bell brings to an end her scholarly survey of the literature and pedigrees relating to hereditary anomalies and diseases of the eye. To those who are familiar with the previous sections it needs no recommendation. The conditions here taken up are such anomalies in the size of the eye as anophthalmos, microphthalmos, megalocornea, buphthalmos; anomalies in the development of the iris-aniridia and coloboma iridis; ectopia lentis and glaucoma. Consideration of hereditary nystagmus had, for lack of space, to be omitted, but Dr. Bell hopes it may be possible to take this up at a later date. For the present study over 300 pedigrees have been collected from unpublished and published sources, and are set out together with a very considerable amount of relative detail. The information which the extensive literature has yielded and the deductions to which it leads are discussed with the care and caution that are always associated with the Galton laboratory. Readers will note with regret that with this volume Prof. Karl Pearson brings his distinguished editorship of the series to a close, in view of his approaching retirement from the Galton chair.

The Life and Work of Lucy Bainbridge

By A. H. MCKINNEY, Ph.D., D.D. London, Edinburgh, and New York: Fleming H. Revell Company. 1932. Pp. 201. $2.00.

THE career dealt with in this small book was thoroughly worthy of record, for Lucy Seaman, afterwards Lucy Bainbridge, devoted her long life of 86 years to welfare work, much of which indirectly or directly was associated with medicine. To the end she was unceasing in her endeavours to mitigate suffering, which she began when during the American Civil War, as a young girl, she was a nurse in the army of the North. With one section of the troops she was well known as "Sister Ohio," and when the great Abraham Lincoln spoke to her she remembered that he made reference to her red hair. She also met General Grant, and later was able in one of her books—and she wrote several—to give a vivid picture of the two men. Through her close contact with Clara Barton, an early organiser of Red Cross work, whose life is sometimes compared in America to that of Florence Nightingale, she became acquainted with the conditions under which nursing was conducted some 50 years ago in the United States, especially in the more newly settled parts, and she has described in vivid terms the horrors of pioneer nursing when the women, practically untrained, could only obtain the most rudimentary equipment and when all the facilities of transport were absent. Marriage altered the immediate objectives of her work, but in no way led her to abate her energies which now were directed towards religious organisation. She travelled round the world, visiting mission stations in various countries, and was the leader of City Mission work in New York. The author of the book was himself formerly superintendent of the New York City Mission Society, while the well-known New York surgeon, William Seaman Bainbridge, is her son, so that on medical and social sides alike the biography appears with authority.

Preventive Medicine

Fourth edition. By MARK F. BOYD, M.D., M.S., C.P.H. London: W. B. Saunders Co., Ltd. 1932. Pp. 532. 22*s.* 6*d.*

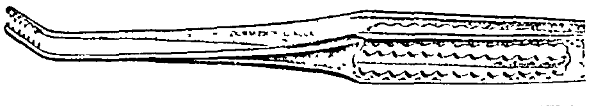
THIS book, primarily intended for American medical students and general practitioners of medicine, deals, in 37 chapters, with communicable diseases, deficiency diseases, occupational diseases, puerperal diseases, heredity in relation to disease, certain special problems of hygiene, vital statistics, and public health administration. The writer, having held a chair of bacteriology and preventive medicine, approaches the problems of public health from the scientific point of view. but sets out the information available in a simple and practical manner. The book is copiously illustrated; most of the illustrations are well reproduced, but some of them are perhaps unnecessary. The chapter on milk will be of special interest to sanitarians of this country at the present time: it will probably be news to some of them that chlorine for the sterilisation of milk utensils is now superseding steam in America. It is astonishing and a little disappointing to find practically no reference to the importance of what has been called latent epidemisation and latent immunisation in relation to the problems of epidemics, and the account of modern ideas in relation to the bacteriology of food poisoning is very sketchy. Ample references are supplied to American literature on public health and sanitation, especially to the publications of the various departments of the United States Government.

Dr. Maude Abbott's book on the History of Medicine in the Province of Quebec, reviewed in THE LANCET of Dec. 17th last, is a reprint, with additions and illustrations, of a collection of monographs hitherto only available in Canada. It can be obtained in this country from H. K. Lewis and Co. for 15*s.*

NEW INVENTIONS

UPPER FIXATION FORCEPS

THESE forceps are for fixing the eye in cataract extraction. One foot is placed on the upper limbus and the other 5 or 6 mm. higher up on the globe. They are then closed. This gathers up the intervening conjunctiva to the limbus, where it forms a fold or pleat held at its base in the forceps. This affords very good fixation. The corneo-scleral section is now made forthwith, the knife cutting out immediately behind the feet of the forceps—i.e., through the posterior layer of the conjunctival fold. This procedure makes a good conjunctival flap.



The forceps are made by Messrs. Down Bros., Ltd., St. Thomas's-street, London, S.E.

D. PRIESTLEY SMITH, M.B., Ch.B. Birm., M.R.C.S

REPORTS AND ANALYSES

PY-SHAN POINTS TEA

(THOMAS CHRISTY AND CO., 4, OLD SWAN-LANE, E.C.)

WE have analysed a sample of Py-shan Points tea with the following result:—

Moisture	7·2	per cent.
Ash	5·3	„ „
Total extract	45·6	„ „

The tea, when infused for five minutes with boiling water, yielded

Caffein	3·8	per cent.
Tannin	13·6	„ „

So far as analytical figures are concerned the inference may be drawn that the tea is one of good quality. The tannin content, to which importance is attached by some if it be high, is fairly low, the caffein and other constituents are normal. The tea itself is derived from selected tips of the pickings, and as a consequence the flavour of the infusion is not rough, but is soft and refined. This tea was analysed in THE LANCET laboratory 22 years ago, and it is noteworthy that during that long period its high quality has been maintained.

BOURNEMOUTH ORIGINAL SPA WATER

(THE SOUTH-WESTERN MINERAL WATER CO., LTD., SPRING-ROAD, BOURNEMOUTH)

We have had submitted to us a sample of this spa water for analysis and comment.

The water is derived from a deep artesian well, is colourless and odourless, and the dissolved carbonic acid gas imparts an agreeable and "fresh" sensation to the palate. When poured into the glass the excess of gas is liberated, producing a sparkling effect.

When analysed the following results were obtained:—

	Parts per 100,000.		Parts per 100,000.
Silica (SiO_2)	0·80	Soda (Na_2O) ..	7·95
Alumina (Al_2O_3) ..	2·55	Chlorine (Cl) ..	6·72
Iron (Fe_2O_3) ..	1·20	Sulphuric acid (SO_3)	17·50
Lime (CaO)	4·05	Total solids	42·40
Magnesia (MgO) ..	2·62	Free carbonic acid	22·00

These figures may be expressed in combination as follows:—

Silica	0·80	Calcium sulphate ..	[illegible]
Aluminium sulphate	7·40	Magnesium „ ..	7·86
Iron bicarbonate ..	1·80	Sodium „ ..	4·74
Calcium „ ..	2·29	Sodium chloride ..	11·10

The reaction of the water is faintly acid owing to the presence of free carbonic acid, on consumption however it would become alkaline. The mineral constituents are of interest, particularly the aluminium sulphate, which may have a slightly astringent effect; the bicarbonate of iron will be of use in cases of anæmia, and the sulphate of magnesium and sodium will tend to render the water aperient in character. The carbonic acid gas present is an undoubted aid to digestion, as this gas causes an earlier and more abundant secretion of gastric juice. The water is exceptionally pure, not heavily saline, and brilliant in appearance.

GLOVES FOR A MEDICAL OFFICER OF HEALTH.—At a meeting of the Prescot council's general purposes committee on Jan. 10th, Dr. S. M. Green, medical officer of health, was able to report that during the last month, among a population of about 12,000, there had been [illegible] deaths in the district, while the births had numbered [illegible]. Dr. Green was presented with a pair of gloves.

THE LANCET

LONDON: SATURDAY, JANUARY 28, 1933

MIGRAINE

WE publish in this issue the concluding part f a paper by Dr. MACDONALD CRITCHLEY and r. F. R. FERGUSON on migraine, a subject in hich many members of the medical profession ake more than an impersonal interest. There is urely no other disorder which reduces its victims, lbeit temporarily, to an equal degree of discomfort, incapacity, and indignity. The triviality f the sick headache—its very name a synonym or futility—usually prevents the sufferer from eceiving much sympathy. If the attack is evere he can only lie, more or less prostrate, n a darkened room, waiting impotently until t shall have run its course.

An excellent review of all aspects of the disrder, together with some four hundred references, as recently been published by H. A. RILEY.[1] t must be confessed that neither Drs. CRITCHLEY nd FERGUSON nor Dr. RILEY offer the sufferer nuch hope either of prevention or of cure. Neither rophylaxis nor treatment is likely to be completely uccessful until the causation of migraine is better nderstood. The question of ætiology comprises t least two distinct problems which can be nvestigated independently—the nature of the ocal disturbance of function responsible for the eadache and cerebral symptoms, and the chain f events leading up to this. Several recent nvestigations promise to illuminate the nature f headache in general and of migrainous headache n particular. G. W. PICKERING and W. HESS[2] ave lately sought to ascertain the mode of producion of headache by the intravenous injection of istamine. They made the interesting observaion that although histamine causes general vasoilatation associated with a rise of the pressure of he cerebro-spinal fluid, headache does not occur uring this phase, but only when the vasodilatation egins to decline; when it is at its height the pain an be temporarily abolished by a further injection f histamine. The cause of the headache induced y histamine is not yet clear, but there is lausibility in the view—one of two alternatives iscussed by PICKERING and HESS—that it is ue to an over-expansion of the cerebral arteries r arterioles, which for some reason only attains ts maximum after the preliminary vasodilatation as subsided. This hypothesis assumes additional nterest in view of F. HARE's observations, quoted by RILEY, on the effects upon the migrainous headache f compressing various arteries of the head and eck. HARE found that in unilateral migraine ressure upon the common carotid of the opposite side increased the pain, and in bilateral migraine pressure upon either common carotid removed the pain on the corresponding side and increased it upon the opposite side. He also found that in some cases it was possible to relieve or even to abolish the pain by compressing one of the superficial arteries of the scalp on the side of the headache. Unilateral headache in migraine is often associated with dilatation and increased pulsation of the superficial temporal artery on the same side. There is therefore considerable evidence that migrainous headache is associated with abnormal dilatation of the arteries of the head and can be temporarily abolished by diminishing the blood-flow through them. We do not know whether the pain arises directly from the distended vessels or whether it is an indirect result of their distension. That an increased pressure of cerebrospinal fluid is the cause of the pain is improbable for several reasons. There is evidence that the pressure of the fluid may be subnormal in migraine and in other states associated with headache—for example, following lumbar puncture and in some cases of head injury. Conversely, provided the leptomeninges are not inflamed, the pressure of the fluid may be considerably above normal without headache resulting—for example, in some cases of hydrocephalus. The cerebral blood-vessels are supplied with sensory nerves and appear to be sensitive to pain. It seems probable that they play a more important part in the production of headache than is generally suspected, even in conditions such as intracranial tumour where some other cause seems operative.

If the immediate cause of the headache in migraine is a temporary functional disturbance of the cranial blood-supply, how is this produced? The distinction of clinical types of migraine made by CRITCHLEY and FERGUSON is likely to be misleading if it is supposed that these types necessarily appear in different people. The same patient may at different times experience a large variety of attacks, headache, vomiting, ocular disturbances, paræsthesiæ, and mild confusion occurring in all possible combinations and also as isolated symptoms; and the attack may be traceable on different occasions to eyestrain, dietary indiscretion, menstruation, exposure to cold, or emotional stress. It is clear that all causes of migraine must possess in common the power to evoke a certain unknown state of the organism which is the immediate cause of the attack. Is there perhaps a toxin which, on the analogy of Sir THOMAS LEWIS's H-substance, may be called an M-substance, which is a by-product of metabolic, allergic, and other disturbances, and which produces a temporary disorder of the cranial blood-supply? Such a hypothesis is suggested by our present knowledge and may prove of value at least as a basis for future investigations.

Dr. CRITCHLEY and Dr. FERGUSON say that migraine is encountered in people of all types of intellectual ability, in all classes, and in all professions. Those of us who suffer from it, however, will continue to console ourselves with the classical teaching that it affects predominantly, if not exclusively, the most intelligent and sensitive members of the community. It is, we feel, a disharmony resulting from that exceptional development of the forebrain which differentiates man from the animals, and is thus the badge of a mental type which represents the highest point yet achieved in human evolution.

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[1] Bull. Neurol. Inst. of New York, 1932, ii., 429.

[2] Brit. Med. Jour., 1932, ii., 1097.

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MANCHESTER AND MUNICIPAL POWERS

WE gave reasons last week for regretting that Manchester had defeated the proposal to ask Parliament for a local Act compelling the pasteurisation of milk. This was only one of several new powers desired by those responsible for the administration of a city which has been a pioneer in English public health. But even if the recent poll had given the town council a majority for its proposals (as on previous occasions), there would still remain the fight in Parliament. The clause for compulsory pasteurisation of milk has no English precedent, and the Select Committee on Local Legislation (if its critics may be believed) concerns itself more with the novelty than with the merits of such clauses. The Manchester incident may revive interest in suggestions which reformers have offered for the removal of the limitations on the powers of municipalities. Why, it is asked, should the town council of some great English city, comparable in wealth, population, and good administration with some of the independent States of Europe, have to resort to the slow and clumsy machinery of petitioning Parliament for a Local Bill whenever it is desired to extend some local service ? Why should the Victorian restrictions of the ultra vires doctrine, seemingly evolved in order to control the activities of statutory railway companies, be allowed to fetter municipal corporations ? It is anomalous and anachronistic, wrote a critic not long ago, that Birmingham is unable to carry on a milk-distributing trade, that the L.C.C. has never been allowed to help out its tramway system with omnibus services, and that Manchester must go cap in hand to Parliament for leave to undertake any trifling new activity, at great expense and with the possibility of being refused without reason assigned. One possible reform would be to reserve certain matters for national control and to allow the big cities to undertake any service belonging to public health or local government outside the matters expressly reserved. There is nowadays an object lesson in Ulster, where the Belfast legislature can deal with all non-reserved subjects. Similar devolution must be conceded some day to large-scale units of local administration in England, if only to relieve pressure on the Parliament at Westminster.

The problem unfortunately is usually attacked on the lines of party politics. The Local Authorities (Enabling) Bill, twice introduced in the House of Commons in the past six years, proposed to give the bigger local authorities liberty to conduct any business or undertaking which could come within the scope of a company incorporated under the Companies Act. The pros and cons of municipal trading are not t whole matter. There is at present too lit margin for experiment in local governme although improved standards of public healt have undoubtedly been attained by experime in progressive localities.

First of all, however, town councils which ai at pasteurisation or anything else that is ne must convince their constituent ratepayers Democracy must be persuaded to want what i ought to want. It was perhaps a tactical err to load the Manchester programme with as man as 15 different groups of proposals. Objecto to one group were evidently tempted to reje the whole programme. The results were surprising. One of the heaviest defeats was that of a seemingly innocent proposal as to elective auditor In fact, discrimination was inconspicuous; bu can democracy be expected to answer 15 questions at a time ?

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QUININE AND ITS SUCCESSORS

AFTER long preliminary inquiries the healt organisation of the League of Nations asked tho countries who favoured the holding of an International Quinine Conference to be supplied with particulars of the local prevalence and treatmen of malaria. The valuable information received from 93 health departments has now been codified and published.[1] Of the world's quinine, ove nine-tenths is made in Java and Sumatra, and about one-tenth in the Indian Empire, so that f all other countries the amount imported is a measure of what is used. There is one exception, that o Italy, where about 4000 kg. of quinine were mad in 1929, being a seventh of the estimated national need. The quinine imports of all countries during 1931 were 60,000 kg., whereas the estimated amount which would have been made had every malaria case received 20 g. annually would have been 1,387,000 kg. One example will emphasise this point. In India, out of 100 million cases—a moderate estimate—only from 8 to 10 millions are treated, and the amount of quinine distributed does not exceed 2·0 g. annually for each treated case. The remedy which seems obvious is the wid planting of cinchona ; but the matter is not s simple as that, for 50 years ago Ceylon exported 453,000,000 kg. of bark in one year, whereas no there are only 20 acres under cultivation there.

The problem is essentially economic, and mu light is thrown on it by a discussion which to place last June before the Royal Society of Tropic Medicine and Hygiene.[2] As Mr. T. A. HENRY, D.Sc then pointed out, what faces the Malaria Commission of the League of Nations is the attempt t discover some method of providing treatment f the very many victims of malaria who are too p to buy quinine, and whose governments cann afford to provide it free, or even to subsidise i adequate distribution. Colonel S. P. JAMES, wh d opened the discussion, showed how complex atment of the individual really is. There has be considered not only the question of plasmodial ecies, but of strain within the species. In primary ses of subtertian malaria a Roman strain has eded for control eight times as much quinine as n Indian one: a severe Madagascar strain is owerfully acted on by neosalvarsan, a mild Dutch ne but weakly. Important, too, is the stage of e-history, for the synthetic product plasmoquine effective against gametocytes but ineffective gainst schizonts: while another newly introduced nthetic product, atebrin, has a selective action gainst the schizonts of avian malaria—an action hich P. H. MANSON-BAHR has confirmed for a few ses in man. Again, the St. Mary's Hospital rophylactic experiment showed plasmoquine to e a good preventive of infection, acting presumably the early stages of the human cycle of the arasite—though unfortunately the daily dose eedful for full protection is too near the toxic dose r it to be taken for more than a few days at a time. urthermore, the effectiveness of drugs depends n a certain duration of infection; while, owing the fact that in natural conditions infection is ften seasonal, there is an apparent seasonal effect n their efficacy. This point has then to be borne n mind in comparing them; so, too, has variation n the constitution of different races of man. Lastly, s Prof. N. H. SWELLENGREBEL pointed out, a ystem of prophylaxis and treatment of proved alue may break down under the bites of many nfected mosquitoes, presumably because many porozoits are injected about the same time.

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[1] Enquiry into the Quinine Requirements of Malarial Cou and the World Prevalence of Malaria. League of Nat Health Organisation. C.H./Malaria/185. Geneva. Dece 1932.

[2] Trans. Roy. Soc. Trop. Med. and Hyg., 1932, xxvi., 105; T THE LANCET, 1932, i., 1362.

Speaking on the production of synthetic drugs, rof. WERNER SCHULEMANN noted that it had never een the aim at Elberfeld to synthesise quinine, ut to produce new drugs with action on new and ifferent lines, and giving results which quinine ould not give, since it was there held that only on hose lines could laboratory research give progress. o far as concerns quinine, the outcome of the iscussion may probably be summed up in Sir DAVID PRAIN's view that the work on these synthetic rugs was such that it was no longer fair or justiiable to urge the further extension of cinchonarowing—significant coming from one with his reat experience of the cultivation. Nevertheless, here is at present no drug other than quinine which can be used in the mass to combat malaria ith any feeling of safety, and it is even possible hat the search for some synthetic product to take ts place may aid the cinchona industry: for the vidence seems convincing that it is not quinine ut some substance formed from, or by the stimu-ation of, quinine in the host's body which is urative. Should that unknown body be discovered n the laboratory, it will clearly depend on relative osts whether it is cheaper to produce it from omething else, or from cinchona bark. At all vents, the essence of the matter at the present ime is the question of costs. That the proposed nternational Quinine Conference should take place s clearly desirable. It will have many and mportant points to decide.

THE RETARDED CHILD

THE educational problem of the retarded child is one which, except in a few limited areas, has not seriously been faced in England. The Wood report of 1929, which ostensibly dealt with the narrower problem of the mental defective, demonstrated that, from the educational standpoint, the problem of the mental defective was but part of the wider problem of retardation in general, and recommended that the range of special school or class schemes should be correspondingly extended. In view of this report, it is interesting to read[1] of a system now in operation in Massachusetts which provides for the ascertainment and the education of all children retarded more than three years. Dr. DAYTON's article is written in commemoration of Dr. WALTER E. FERNALD, the initiator of the system, who organised its machinery and provided it with an elaborate scheme of examination. About 30 years ago Dr. FERNALD opened an out-patient department at his school for defectives at Waverley. Later this clinic became a travelling unit which visited schools and conducted examinations of retarded children. Finally, in 1919, a law was enacted making it obligatory for the school committee of each town to ascertain all children in attendance who were three years or more retarded, and also for special classes to be provided wherever there were ten or more such children. The requisite examinations were to be made by the State department of mental diseases, and sufficient travelling clinics have been established, staffed by hospital experts, to cover the whole State. The personnel of each travelling clinic is identical with that usually provided in this country for a child guidance clinic—viz., a psychiatrist, a psychologist, and a social worker; but much of the work assigned to the last is sometimes done by a school nurse or a teacher.

The examination itself is based upon FERNALD's well-known "ten-point scale," and, although its general lines are similar to those familiar in this country, it is probably seldom, if ever, that examinations of defectives are carried out here with so much elaboration and detailed inquiry. Family history, personal characteristics and social conduct, physical health, are all fully studied, and a psychological examination is carried out, utilising the Stanford-Binet scale. Incidentally, it is curious to note that there is no mention of the use of any performance tests. In this country, examinations of defectives for educational purposes are made usually by school medical officers who, in addition to their ordinary medical training, are expected by the Board of Education to have attended a short special course; but it is only in the larger town and city areas that medical officers obtain such opportunities of experience as will enable them to become expert in diagnosis, and it is notorious that the standards adopted in different areas of the country vary very widely. Only in a very few areas is there an official psychologist, and he has no standing in relation to the diagnosis of mental defect. It is quite certain that if ever there is to be provision for the retarded child in the wider sense on the lines suggested in the Wood report there will have to be some modification of the present procedure, and, in particular, a psychologist will have to find a place in the scheme.

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[1] Niel A. Dayton, M.D., Director of Research for the Massachusetts State Department of Mental Diseases: The Walter E. Fernald Plan for the Examination of Retarded School-children, New Eng. Jour. Med., Nov. 24th, 1932.

We are approaching a time, if indeed we have not already reached it, when more attention will be given to the retarded, the nervous, the difficult, and the delinquent child. A number of experiments in dealing with the retarded by means of "opportunity" classes are in progress, while the movement for child guidance clinics is spreading rapidly. The best evidence of this widespread interest may be seen in the report of a week-end conference which appeared in last week's issue (p. 175). I the examination of these classes of childr a diagnosis of mental deficiency is alwa one of the possibilities; on the other han the certifying officer for defectives finds himse frequently confronted with cases of these oth types. It seems inevitable, therefore, th the personnel for the examination of defectiv should, in future, approximate to that required f these other purposes, and that indeed the personn of a child guidance clinic and of an educati committee for the examination of the retarde should be identical. It may, however, be questioned whether so elaborate a scheme of examination a that of Massachusetts will be practicable or eve in every case necessary.

ANNOTATIONS

TEACHING IN MUNICIPAL HOSPITALS

As the result of negotiations between the London Voluntary Hospitals Committee, appointed under Section 13 of the Local Government Act, 1929, and the London County Council, facilities for undergraduate teaching are to be available in certain of the Council's general hospitals. The plan is that for teaching purposes each of the London medical schools will be linked up with one or more London County Council hospitals. The teaching will be in the hands of the staff of the medical school, and since it is difficult to teach on patients whose treatment is not under the control of the teacher, the appointment of consultants to the municipal hospitals from among the staffs of the medical schools is obviously desirable. On the other hand, a medical officer attached to a municipal hospital would presumably be eligible for appointment as a recognised teacher of the University of London. Precise details of the scheme have not yet been worked out but are in process of settlement between Sir Frederick Menzies and the deans of the medical schools. Somewhat similar arrangements have long been in force in some of the hospitals formerly controlled by the guardians, and the idea is to develop and systematise these facilities. The value to students of the clinical material collected in the municipal hospitals can hardly be overrated, while the introduction of systematic teaching into the routine of municipal hospitals cannot fail to be a stimulation to the staff and indirectly to benefit the patients. The innovation, moreover, has historical importance as the first definite link to be established between municipal and voluntary hospital services. The development of these two services on completely independent lines would have been a calamity for the public as well as for the medical profession.

THE PRESCRIPTION OF THYROID

In the early days of the use of the thyroid glands of animals in medicine, liquid preparations made by extraction with media containing glycerin or alcohol were used. At a later stage, methods were devised for preparing a dry powder from the glands and for making this into compressed tablets. The strength of the tablets was expressed in terms of the equivalent of fresh gland, this representing the only possible means of standardisation at that time. The British Pharmacopœias of 1898 and 1914 described an unstandardised powder prepared from the thyroid glands of sheep, under the name of Thyroideum Siccum, this preparation being usually regarded as about five times as potent as an equivalent quantity of fresh gland. When the prescriber used a Pharmacopœial name, thyroideum siccum or dry thyroid, the dispenser was in no doubt as to his intention, but when the prescription was for tab. thyroid, thyroid extract, or thyroid gland, the dispenser was often uncertain whether the prescriber had in mind the Pharmacopœial preparation or the fresh gland and such prescriptions were often referred back fo elucidation. The unofficial British Pharmaceutica Codex, 1923, attempted to give some guidance o this point in the form of the following statement:—

> "Dry thyroid should be dispensed only when thyroideu siccum or dry thyroid is ordered; when thyroid, thyro gland, or thyroid extract is ordered, the dispenser shou supply the fresh gland or its equivalent (1/5) of dry thyr made up with milk sugar to the weight ordered."

The effect of this advice was that, when any doub arose, the patient received the smaller of the tw quantities which the prescription might possibly b interpreted to mean. For national health insuranc purposes the National Formulary expressed th doses of tab. thyroid gland in terms of fresh glan and recorded the corresponding doses of thyroid sic

Since thyroid is always handled by the dispens in the form of the dry powder, or the powder compressed into tablets, there appears to be no justification, except that of habit, for retaining the syste of prescribing thyroid in terms of fresh gland. I fact, the inclusion in the new Pharmacopœia of chemical method of standardising dry thyroid o the basis of its content of the active princip thyroxine, introduces complications in manufactu which add force to the objections arising from th possibility of ambiguity in reading prescription The British Pharmacopœia, 1932, describes, und the names "Thyroideum, Thyroid," a dry powd which has been standardised and adjusted to conta 0·1 per cent. of iodine in combination as thyroxin As alternative names, the synonyms thyroideu siccum, dry thyroid, thyroid extract, and thyro gland are applied to this preparation. These inclu all the usual names employed in prescribing thyro and it is for the prescriber to note that a prescripti written with any of these names must be interpret by the dispenser to imply that the thyroid of t Pharmacopœia is intended. Prescribers who ha been accustomed to think in terms of fresh gland a who continue to write their prescriptions on th basis will run the risk of their patients receivi out five times the quantity of thyroid intended, less they make it perfectly clear that the dose ated means fresh gland. But this method of escribing should now become obsolete: the stan- rdised Pharmacopœial preparation is the obvious sis for prescribing thyroid, and practitioners will wise to accustom themselves to write their pre- riptions on that basis. Manufacturers now express e dosage of their tablets in terms of the Pharma- pœial thyroid, and it is expected that in the new ition of the National Formulary the same basis of sage will be adopted.

PROGNOSIS IN CORONARY THROMBOSIS

ON the day before his death from coronary throm- osis Dr. Carey Coombs corrected the proofs of a aper on prognosis in this disease, and it appears the current issue of the *Bristol Medico-Chirurgical* ournal (p. 277). It is an amplification of that read the centenary meeting of the British Medical ssociation last summer, and deals with 144 cases oserved by Dr. Coombs. Of this number 49, or oughly one-third, died in, or soon after, the attack, nd of the survivors another third died within 12 onths. Age was found to be of some significance in rognosis, since 67 per cent. of those under 60 survived he attack, whereas the attack was fatal in 58 per ent. of those over 70. Sex had very little influence n prognosis, the outlook being slightly more favour- ble in males. There was no relationship between a istory of previous angina and the immediate or emote result; but in those cases in which the pain as abdominal in the attack the outlook was not uite so good as in those in which the pain was oracic, as is more usual. The important fact which merges from this study is that the prime factor in rognosis is the severity of the attack itself. This is ifficult to assess except from the consideration of the unctional efficiency of the heart as revealed by the ulse pressure. In this series 70 per cent. of those atients whose pulse pressure fell to 25 per cent. of the ystolic pressure or less died in, or within a short time f, the attack, and all were dead within a year. Unfortunately the converse, that all patients with a ide pulse pressure recover, does not hold true. One ther factor is of value in estimating the degree of ardiac damage, and thus the outlook for the patient, nd that is the occurrence of pericardial friction. his was heard in 42 cases, and of these 43 per cent. ied in the attack and a further 30 per cent. of the urvivors within 12 months, whereas the figures for hose patients in whom no rub was heard were 25 er cent. and 41 per cent. respectively.

The question of the outlook in coronary thrombosis s one of the most baffling problems in the whole of rognosis, while this paper recalls the loss sustained y the Bristol Medical School.

PHOTOGRAPHY IN THE INFRA-RED

PHOTOGRAPHY by infra-red radiations is one of he most interesting modern developments of the rt. Attempts to manufacture emulsions sensitive o infra-red rays date back to Herschel's experiments n 1840, but the preparation of this material has only ecome practically possible with the introduction f the cyanine group of dyes. Messrs. Ilford have ecently discovered a new dye which would allow he preparation of an emulsion of considerably igher speed and greater cleanliness in processing han its predecessors, and are eagerly working to render it even faster, and also to extend its range beyond the 9000 Å which is its present limit. At a meeting of the Royal Society of Arts on Jan. 18th Mr. Olaf Bloch, head of the research laboratories at Ilford, and president of the Photographic Society, reviewed the progress so far made.

The application of infra-red photography to medicine has hardly been explored, but one or two interesting possibilities are suggested. For instance, pathological changes in the myocardium have been illustrated clearly by post-mortem photography. Attempts have been made to photograph soft tissues by the infra-red rays transmitted through them, but the scatter is great and little detail is available in the prints. A photograph of the hand taken by the rays, to which it is slightly transparent, showed little beyond the outline. The infra-red rays, of course, are even longer than the rays of light, and have no penetrating power to compare with even the longest X rays. Mr. Bloch reported that photographs taken in Denmark of a case of lupus showed distinction between dead skin, tissue with lupus nodules in it, and healthy tissue. Results on the diagnosis of skin complaints and of such diseases as produce markings on the skin have not been very promising, but may still yield information of value. The lecturer showed a photograph which must already have attracted the attention of ethnologists: a man who when photographed by ordinary methods appeared to be a typical negro of deep colouring, showed on the infra-red sensitive photograph a surprising modification both of tint and feature which suggested strongly a Mongolian element in his heredity. The new photographs, when compared with orthodox ones of the same subjects, show a startling difference in the modelling of the features and the complexion, and this property may find an application to police work. Black fabrics suitable for use in the tropics can be chosen by their property of reflecting instead of absorbing infra-red rays; the new prints have shown great variation in this property between fabrics which to the eye seem to be of exactly the same hue.

PROLAN AND CANCER

PROLAN is one of the names given to the gonadotropic hormone, secreted by the anterior lobe of the pituitary, which controls the ovarian cycle and induces ripening of the follicles and luteinisation. Whether prolan is one hormone producing these two different processes or whether it consists of two different hormones, one, A, producing maturation, the other, B, luteinisation, is not yet certain. Nor is it clear whether the substance which can be prepared from the urine of pregnant women, and which has the same physiological effect on the ovarian functions, is identical with the hormone prepared from the pituitary, or only closely allied to it, having possibly undergone a slight chemical alteration.[1] What is certain is that while the urine of normal women contains only small amounts of this hormone, there is a great increase during pregnancy. This, indeed, constitutes the basis of the Aschheim-Zondek test for pregnancy. While the urine of normal women contains about 5 mouse units per litre that of pregnant women contains as much as 3000–5000 units. From this it was a natural step to pass from normal to pathological pregnancies, and to study the excretion of prolan in such conditions as hydatidiform mole and chorion epithelioma. In these conditions B.

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[1] This question was referred to by Prof. W. Schoeller in THE LANCET of Jan. 7th, p. 40.

Zondek[2] found a great increase in the prolan content of the urine, equalling and even exceeding that found in pregnancy. What is more remarkable is that similarly large amounts of prolan are excreted in the urine of males suffering from testicular chorion epithelioma. In other testicular tumours an increased, though less marked, excretion of prolan has often been found, and Zondek states that "the presence of the follicle-maturing hormone in the urine of men should arouse suspicion of a malignant testicular tumour." This has been confirmed recently in America by R. S. Ferguson,[3] who in an abstract of Zondek's paper states, on the basis of 100 cases of testicular tumours, that in chorion epithelioma the average excretion is approximately 50,000 mouse units per litre, in embryonal adenocarcinoma 10,000–40,000 units, in embryonal carcinoma with lymphoid stroma 2000–10,000 units, in seminoma 400–2000 units, and in teratoma of mixed structure mainly of adult type 50–500 units.

Zondek was thus led to investigate the prolan excretion in patients with other types of tumours, and has recently summarised his results in English in a paper[4] read at the meeting of the American Gynecological Society. The increase in the prolan excretion was found to be much less striking and less common. It was observed in 80 per cent. of women with genital tumours, but the increase amounted only to from 20 to 30 times the normal physiological amount; or, expressed in mouse units, to 100–150. Moreover it was found not only in malignant but also in benign genital tumours. In women with extragenital tumours it occurred in only 36 per cent. of all cases. It is also pointed out that the urine from all these cases, when it is active at all, produces only maturation of the follicle and not luteinisation. An increased prolan excretion has not so far been found in the urine of men with cancer of the prostate. Whether the test for prolan is sufficiently delicate to indicate such relatively small differences in the prolan content of urine is a subject for further investigation. It is clear at any rate that the increased excretion of prolan depends primarily on the type of tumour and, secondly, on its site, and cannot at present be considered as a general reaction to the presence of malignancy. The reason why tumours of the sex glands particularly influence the prolan excretion may perhaps be found in the fact that while the pituitary regulates the functional activity of the sex glands, the latter are also capable of influencing the pituitary. Thus castration produces, as S. Fichera showed in 1905, very definite changes in the anterior lobe of the pituitary. This has been confirmed repeatedly, and has been demonstrated by J. Tandler and S. Grosz (1907) and others also in castrated men and women. J. C. Mottram and W. Cramer (1923) have found that similar but even more extensive changes in the pituitary, affecting not only the pars anterior but also the pars intermedia and the pars posterior, occur when atrophy—even partial atrophy—of the seminiferous tubules is produced by *irradiating the testis*. Under these conditions the interstitial cells hypertrophy. Zondek noted that castration produced an increased excretion of prolan not only in women but even in men. It seems possible, therefore, that the increase in the prolan excretion in tumours of the genital organs, other than chorion epithelioma, may be due, partly at any rate, to an impairment of the function of these organs produced by the destructive effect of the growth of the neoplasms, and that patholog conditions of the genital organs, other than tum but involving an interference with functi may also lead to an increased prolan excretion.

The most sensational development of this line of investigation is the claim made in a recent paper by B. and H. Zondek and W. Hartoch[5] that it is possible to inhibit the growth of a transplantable mouse carcinoma by repeated injections of massive doses of prolan. Unfortunately the data given in the paper are too incomplete to enable the reader to form a critical judgment. There are not even figures illustrating the histological appearances of the prolan-treated tumours. What is particularly difficult to understand is the statement that after transplantation of a tumour from a prolan-treated mouse into normal mice, which received no further treatment with prolan, the tumour continued to grow slowly, and that a second transplantation into normal mice further diminished the rate of growth. Clinical experience on the effect of pregnancy—where there is an intense physiological prolanæmia—on cancer does not support the idea that prolan inhibits the rate of growth of a malignant neoplasm, either in the human subject or in mice. If an inhibition of tumour growth takes place in pregnancy it is as an exception and not as a rule. It will be advisable, therefore, to await further confirmation of the experimental findings of Zondek and his collaborators on the alleged therapeutic effect of prolan in cancer.

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[2] Die Hormone des Ovariums und des Hypophysen Vorderlappens, Berlin, 1931; Klin. Woch., 1932, xi., 274.

[3] Amer. Jour. Cancer, 1932, xvi., 1189.

[4] Amer. Jour. Obst. and Gyn., Dec., 1932, p. 836.

[5] Klin. Woch., 1932, xi., 1785.

COMPOUND FRACTURES OF THE LOWER LIMB

THE New South Wales branch of the British Medical Association recently held a special meeting to consider compound fractures of the lower limb. Subsequently the *Medical Journal of Australia* (1932, ii., 497, 515) published two opening papers read by surgeons of the Sydney hospitals, and in the same issue commented generally on the treatment of these fractures.

The discussion was an important one and deserves attention from those who, either as staff surgeons or residents, have charge of fracture cases in hospital. Emphasis was laid especially on the responsibility which rests on the surgeon of giving personal care and supervision to every fracture coming under his charge, and of regarding compound fractures as urgent surgical emergencies. Dr. John Hoets and Dr. George Bell, in the opening papers, both spoke of the very great importance of early and efficient treatment in the prevention of infection. Bell put compound fractures in the same category of urgent emergencies as ruptured peptic ulcers; early and efficient treatment, he said, involves excision of the wound (the so-called débridement) within 12 hours of the injury, and thorough cleansing to its depths. The comparative merits and special indications for primary suture and Carrel-Dakin methods of wound drainage and lavage were freely discussed. The protection of young granulation tissue in compound fractures from the trauma resulting from frequent dressings and too active "open" methods of treatment we have only lately begun to appreciate at its true importance. The ideal now is the conversion of an open into a closed fracture. Where the ideal method is not available, as when the time elapsing between injury and operation is 48 hours or over. or when the mechanical difficulties are too great, there is a choice of eith rel-Dakin methods, or of Winnet Orr's closed ster method. The surgical practice of Sydney races both, but the surgeons there seem to prefer Carrel-Dakin. As Hoets puts it: "good results y be obtained in many ways, and also bad results y be obtained when good methods are used badly."

uggestions were made for improvement in methods handling of patients between the arrival of the oulance and the delivery of the patient to operating theatre. It was urged that Thomas's nts should be carried by all ambulances, and t the bearers should be trained in their use. Dr. ets strongly advocated that the patient should be en straight from the ambulance to the bed in a iscitation ward, missing out the casualty depart- nt. The question was raised as to how far complete iscitation methods, as used in the base hospitals ing the late war, were available in modern pitals at a moment's notice, and this is a stion into which surgeons would do well to inquire.

MATERNAL DIABETES AND FŒTAL DEVELOPMENT

T is well recognised that diabetes in the mother l often prevent conception, cause abortion, or ult in the birth of a small and feeble infant. An parently contradictory observation has also been de frequently enough to exclude coincidence— nely, that diabetic women are particularly liable be the mothers of overweight infants. It appears, refore, that under different circumstances fœtal elopment may be influenced either favourably unfavourably by maternal diabetes. Dr. Hans [1] suggests that while a considerable elevation of blood-sugar will tend to destroy the fœtus, a derate rise may stimulate its development to an normal extent. He gives figures with reference to birth-weights of children of 192 women between ages of 30 and 65 in whom diabetes had been gnosed from one month to five years previously; ldbirth had occurred in many instances some rs before the diagnosis was made. Of these men, 37 had borne no children, and 30 (19 per cent.) l borne children who were well above the normal ight. A total of 155 women had had 608 children, which 63 per cent. were of average weight at th, 18 per cent. weighed eight pounds, and nearly er cent. weighed nine pounds. Of the remaining children, 49 weighed ten pounds and 17 ten to elve pounds, *giving a percentage of 10·8 of* "verweight" children. (These figures he compares h W. Zangemeister's,[2] who in an extensive study the infants of normal women found 3·4 per cent. ghing between eight and ten pounds, and only 6 per cent. over ten pounds.) He emphasises observation that not only women with proved betes are liable to bear overweight children, but o women in whom the diabetic condition is not ly established until later years. From this the gestion follows that an overweight child may resent the first manifestation of a latent diabetes, l Bix quotes several cases in which a raised blood- ar during pregnancy was unaccompanied by the earance of sugar in the urine. In two cases a ent diabetic condition was discovered by reason the abnormal weight of the infant. For this son he urges the importance of investigating the ar tolerance of all women giving birth to abnor- lly large infants, and even where the initial tolerance tests prove normal recommends that the patients should be kept under observation for a long time to prevent a latent diabetes being overlooked. In many of his own cases diabetic symptoms did not develop until more than ten years after the birth of an overweight child.

SERUM TREATMENT OF CEREBRO-SPINAL FEVER

WE are again approaching the time of year at which the incidence of cerebro-spinal fever is usually maximal, and the Ministry of Health is anxious to secure accurate data concerning the efficiency and potency of the serums used against the infection. As was pointed out in its "Review of Cerebro-spinal Fever,"[1] the most valuable test is clinical, and as it rarely happens that any one hospital has sufficient cases for useful differential study, the Ministry "is now endeavouring by means of individual case inquiry to collect and examine all evidence available regarding the results of serum treatment, both as to the methods of administration and as to the nature of the serum used." The coöperation of medical officers of health, hospital medical officers, and medical practitioners is invited, and report forms may be had from the senior medical officer, Med. I., Ministry of Health, Whitehall, London, S.W. 1.

REPRIEVE FROM BLINDNESS

IN ophthalmic surgery sensational cures are rare, but a case published by Mr. Herbert Fisher in the *British Journal of Ophthalmology* for January merits this description. Mr. Fisher, who has himself retired from active practice, publishes the case as an encouragement to those of his colleagues who may be prepared to follow his bold treatment of an apparently hopeless case. A boy developed sympathetic ophthalmia as the result of an accident at the age of 11. The injured eye was removed about four or five weeks after the accident. Sympathetic disease in the remaining eye ensued, and two years after the accident, in May, 1921, the patient first came under the care of Mr. Fisher at Moorfields Hospital. At that time the boy could only perceive light. There was still deep injection and much gross keratitis punctata, total posterior synechiæ, and an occluded pupil from inflammatory exudation over the lens capsule with diminished tension—a pretty hopeless condition on which few ophthalmic surgeons would give other than a bad prognosis. After a course of arsenical injection and a six months' continuance of hot bathings, atropine, and mercury by the mouth, all of which had little effect, unless it was to bring the blood count more nearly to normal, the patient was left practically without treatment for five years, during which time he was educated at a blind school. At the age of 18, seven years after the original accident, he was readmitted to Moorfields Hospital. The sight was then no better than perception of light with uncertain projection to the nasal side. Under a general anæsthetic Mr. Fisher first attempted an upper iridectomy and then a scoop extraction of the lens, without success. Finally he inserted a capsule forceps, one blade into the anterior chamber, the other into the posterior, and thus grasping the lens between its teeth at last succeeded in dragging it out together with the fibrous material in which it was enclosed. This heroic treatment was followed by no unfavourable reaction though, the iris becoming completely updrawn, the eye remained blind. Five months later, however, again under a general anæsthetic, Mr. Fisher performed an iridotomy with de Wecker's scissors, resulting in a centrally placed artificial pupil with vision improved to finger counting at 18 inches, which a year later had improved to 6/36. This vision, obtained in May, 1927, has since been maintained, so that the former pupil of a blind school is now living the life of an ordinary sighted person. In reporting this case Mr. Fisher emphasises three points: (1) the extreme loyalty of the patient and of his mother in not giving up hope of a cure through so many years; (2) from the outset Mr. Fisher had insisted on a long period of years before any operative procedure was attempted; (3) in the end the eye tolerated the violent interference which alone could accomplish any useful results.

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[1] Med. Klinik, Jan. 6th, p. 50.
[2] Arch. f. Gynäk., 1917, cvii., 405.

[1] Ministry of Health Reports on Pub. Health and Med. Subjects, No. 65. London, 1931.

THE ALLEVIATION OF LABOUR PAINS

THE great variation in the methods by which obstetricians are attempting to satisfy the public demand for alleviation of normal labour pains is encouraging in so far as it shows active research, but is in itself a proof of what we are weary of hearing—that no ideal anæsthetic for this purpose has yet been found. The question arises whether we are asking too much. At the discussion reported on page 199, Dr. Belfrage spoke of the hope that a method would be found as perfect as that already attained for surgical operations. From the anæsthetic point of view, however, the birth of a child is essentially a physiological operation which differs from surgical operations mainly in the following respects. It may last four or five times as long as any ordinary operation, and cannot be hurried without risk. Skilled medical attention is not, as a rule, available throughout the period, and the pain for which alleviation is sought is intermittent, not continuous. Voluntary muscular effort is required at certain stages of the process, and the patient's welfare is not the sole consideration, since the birth of a partially asphyxiated child may occur, as occasionally after twilight sleep, when the mother's condition has given no anxiety. The search for an effective analgesic which acts over long periods, can be administered safely by a midwife without elaborate or expensive apparatus, does not lessen the involuntary uterine contractions or completely remove the patient's power to assist expulsion by muscular efforts, may well be unsuccessful. Therefore we cannot agree with Mr. Roques (see p. 177) that we must necessarily await the discovery of this ideal anæsthetic before we sanction the use by midwives, with suitable safeguards, of such preparations as are deemed safe in their hands, even if these are not potent enough to do more than diminish the pain. Chloroform capsules are now under trial, and certainly appear to provide a nearer approach to what is wanted than any other device, though they have not escaped criticism.[1] Gas-and-oxygen is generally held to have the advantage over chloroform that uterine contractions are unaffected by its use, but Mr. W. Gilliatt did not except even this drug from his dictum that all anæsthetics inhibit contractions (see p. 201). It seems obvious, from the attention given to this subject of recent years, that the demand for less painful labour will become more and more insistent, and that the public are more interested in the solution of this problem than in any obstetric development, including even the reduction of maternal mortality and morbidity.

VITAL STATISTICS FOR 1932

THE Registrar-General has issued a provisional statement of the figures for birth-rate, death-rate, and infant mortality during the year 1932.

—	Birth-rate.	Death-rate.	Infant mortality rate.
England and Wales..	15·3	12·0	65
118 county boroughs and great towns including London ..	15·4	11·8	68
126 smaller towns ..	15·4	10·8	57
London (administrative county)	14·3	12·3	66

The smaller towns are those with estimated resident populations of 25,000–50,000 at the 1931 census. The birth- and death-rates for England and Wales relate to the total population and are calculated on the estimated mid-1932 population. The remaining rates are calculated on the estimated mid-1931 resident population, and relate to the total population for births, but to the civil population only for deaths.

The Registrar-General remarks that for the fourth year in succession the birth-rate is the lowest on record, being 1·0 per 1000 below that of 1929 and 1930, and 0·5 below that of 1931. The death-rate is 0·3 per 1000, and the infant mortality-rate 1·0 per 1000, below that for 1931. The only year showing a lower rate is 1930. In 1928 the rate was the same—namely, 65.

Mr. H. J. Simmonds, formerly legal adviser to the Board of Education, has been appointed to act as secretary of the inquiry into the affairs of the University of Durham College of Medicine, Newcastle, which is to be held shortly by Sir Amherst Selby-Bigge.

THE third International Pædiatric Conference will be held in London from July 20th–22nd under the presidency of Dr. G. F. Still. The proceedings will include general discussions on the Nature of Allergy and its Rôle in Diseases of Children, and the Prophylaxis of Milk-borne Diseases. Members who wish to make communications should inform their international committees, the secretary of the British committee being Dr. Leonard Findlay, 61, Harley-street, London, W.1.

INDEX TO "THE LANCET," VOL. II., 1932

THE Index and Title-page to Vol. II., 1932, which was completed with the issue of Dec. 31st, is now in preparation. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 7, Adam-street, Adelphi, London, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

STAMPS FOR A CONTRIBUTORY SCHEME.—The Merseyside Hospitals Council, which collects [illegible] £10,000 a year from 33,000 contributors, has adopted a simplified scheme of collecting the money. The contributors are being supplied with cards similar to national health insurance cards, upon which they will affix stamps varying in value from 1*d.* to 5*d.*, purchasable at the various depots. The stamps will be placed on the cards and cancelled with a date stamp. By this system labour will be saved and book-keeping simplified.

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[1] See THE LANCET, 1932, ii., 1070.

SPECIAL ARTICLES

E EPIDEMIOLOGICAL FEATURES OF WHOOPING-COUGH

A STATISTICAL INVESTIGATION

BY PERCY STOCKS, M.D. CAMB., D.P.H.
R IN MEDICAL STATISTICS IN THE UNIVERSITY OF LONDON,
AT THE GALTON LABORATORY, UNIVERSITY COLLEGE

PART I.

RHAPS no serious epidemic disease has suffered neglect by research workers as whooping-cough, it is mainly our ignorance of its epidemiology he consequent scant reference to it in the course edical training which accounts for the apathy e average practising physician and the lack of est of most medical officers of health in regard .

a paper elsewhere[1] I have tried to emphasise act that whooping-cough in London must now egarded as the most expensive epidemic disease ildhood when the cost is measured in terms of of life, acuteness of physical suffering, permanent age to respiratory, cardiac, or nervous mechanism, loss of school attendance, and not in terms of ey spent in efforts to combat it. Analysis of available London notification records have there shown to lead to the broad conclusions that e-fifths of all children born in London have oping-cough at some time, and that the periodicity pidemics might be determined by the occurrence temporary latent immunisation sufficient to ler between one and four children immune to each l who suffers a manifest attack, such immunity ppearing for the most part by the end of one year its acquisition.

the present paper a few additional observations made on the sex- and age-incidence of whooping-gh in London, its probable incubation period, its smission in houses, streets, and schools, and the sures of control which might prove efficacious reducing its ravages. For the data used I am bted to the medical officers of health of Battersea, enwich, Holborn, and Wandsworth, where the ase is notifiable, who have rendered every possible stance by placing the original records at my osal. My thanks to the school medical department he London County Council are expressed later.

Incidence by Sex and Age

he unusual sex ratio in whooping-cough has been ubject of comment for a long time. Statistics of rtality have been analysed by Laing and Hay[2] Aberdeen, by Crum[3] for the United States of erica registration area, by Godfrey[4] for New York te, by Hay and Russell[5] for London and Glasgow, and by Stevenson[6] for England and Wales, and all agree in showing an excessive mortality-rate in girls as compared with boys. At ages under 5 the ratio of female to male mortality-rates was about 1·07 in Aberdeen (1891–1900), 1·12 in Glasgow (1891–1900), 1·20 in London (1911–14), 1·22 in the United States registration area (1900–19), and 1·31 in England and Wales (1911). It was also shown by Hay and Russell[5] that the ratio increases from the first to the fifth year of life, thus :—

Age	0–	1–	2–	3–	4–
London, 1911–14	1·09 ..	1·25 ..	1·37 ..	1·52 ..	1·82
U.S.A., 1900–19	1·09 ..	1·41 ..	1·45 ..	1·56 ..	1·59

These figures refer to mortality, but the incidence of whooping-cough is also greater amongst females than males. It has been shown by Crum[3] from the Aberdeen data, and by Godfrey[4] from notification data in New York State that the ratio of female to male incidence is apparently higher at ages over 10, or over 15, than for younger children, but it has not been clearly demonstrated at what age the ratio begins to increase. I have therefore analysed in Table I. the data relating to some 15,000 notified and reported cases in Greenwich 1919–29, Battersea 1925–30, Wandsworth 1926–28, and Holborn 1921–28, as regards the age- and sex-distribution.

The ratios between numbers of cases need correction owing to the changes with age in the sex ratio in the living population, and this has been done in the last lines in the Table, which shows the ratios between the rates of incidence based upon the census populations of 1921, weighting the population of each borough by the total numbers of cases reported, since the period covered was not the same in each. It is evident that the sex ratio at ages up to 4 years was about 1·05, or 5 per cent. greater in girls ; it then increased to 1·2, or an excess of 20 per cent., by the eighth year, and to 1·5, or 50 per cent. excess, by the tenth year. In adults the ratio was as high as 3 to 1, but this may be partly due to deliberate concealment of the disease by men. Godfrey's figures for New York State in 1913–26 showed a ratio, between numbers of cases, about unity in the first two years, about 1·05 from 2 to 14, 1·2 at 15 to 19, and 2·3 at ages over 20, but from the London data it would appear that there is a significantly greater susceptibility of female infants from birth, and that the contrast increases from the fourth year onwards.

Seasonal Difference in Sex Ratio in Greenwich

It has not been ascertained, as far as I am aware, whether the sex ratio is more abnormal during certain seasons of the year than others. Analysis of the Greenwich cases during the decade 1919–29 according

TABLE I

—	Age-group—												Total.
	0–	1–	2–	3–	4–	5–	6–	7–	8–	9–	10–15.	15 and over.	
al males	813	836	846	997	1118	1334	793	265	103	45	89	24	7263
females ..	844	872	867	1039	1259	1537	863	319	125	69	136	90	8020
tio of cases F : M	1·038	1·043	1·025	1·042	1·126	1·152	1·088	1·204	1·214	1·533	1·528	3·750	—
,, rates ,,	1·046	1·087	1·030	1·025	1·143	1·195	1·112	1·217	1·192	1·556	1·518	3·039	—
,, ,, ,,	1·047				1·143	1·161		1·202		1·530		3 039	

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INDEX TO "THE LANCET." VOL. II., 19

The Index and Title-page to Vol. II., 1932, was completed with the issue of Dec. 31st, is in preparation. A copy will be sent gratis to scribers on receipt of a post-card addressed to Manager of The Lancet, 7, Adam-street, Adel- London, W.C.2. Subscribers who have not alr- indicated their desire to receive Indexes regularly published should do so now.

Stamps for a Contributory Scheme.—The Merseyside Hospitals Council, which collects £10,000 a year from 33,000 contributors, has ad- simplified scheme of collecting the money. The contr- are being supplied with cards similar to national insurance cards, upon which they will affix stamps in value from 1*d.* to 5*d.*, purchasable at the various The stamps will be placed on the cards and cancelled by a date stamp. By this system labour will be sav- book-keeping simplified.

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[1] See The Lancet, 1932, ii., 1070.

TABLE IV

BATTERSEA CASES IN 1925–30 ANALYSED ACCORDING TO SEX, AGE, AND EPIDEMIOLOGICAL FEATURES

Age-group.	Total cases.			Ratio F : M.	"Primary" cases.	Per mille distribution of all cases under 10.	Epidemic periods.		Inter-epidemic periods.
	M.	F.	Sex not stated.				Increasing phases.	Decreasing phases.	
.. ..	316	337	23	1·066	50 (80)	112	232 (246)	200 (225)	224 (206)
.. ..	343	360	4	1·037	*59 (84)*	*117*	*243 (257)*	*239 (235)*	*225 (215)*
.. ..	369	378	5		70 (89)	124	257 (274)	272 (250)	223 (228)
.. ..	430	413	5	1·043	103 (100)	140	318 (308)	270 (282)	260 (258)
.. ..	481	537	6		138 (121)	169	392 (373)	346 (340)	286 (311)
.. ..	540	604	8	1·064	181 (136)	191	433 (419)	369 (383)	350 (350)
.. ..	278	266	3		84 (65)	90	201 (199)	198 (182)	148 (166)
.. ..	97	117	1	1·157	22 (25)	36	83 (78)	68 (71)	64 (65)
.. ..	47	40	—		7 (10)	14	31 (32)	29 (29)	27 (26)
.. ..	15	27	—		1 (5)	7	11 (15)	20 (14)	11 (13)
l under 10	2916	3079	55	—	715	1000	2201	2011	1838
10 and over	40	92	1	2·300	10	22	44	49	40
l	2956	3171	56	—	725	1022	2245	2060	1878
o F : M	—	—	—	1·073	1·201	—	1·083	1·031	1·109

NOTE.—The figures in parentheses are the numbers expected if the total under 10 was distributed in the same way as were ases under 10.

another paper. A subsidiary purpose was to over whether children living in the more densely ulated or overcrowded boroughs in London l to be attacked at earlier ages than children ng in boroughs where housing conditions are better, . this problem is dealt with below. I am greatly ebted to Dr. C. J. Thomas of the London County uncil for suggesting and arranging for this inquiry. he investigation only related to children under- ng medical examination as entrants to elementary ools, where one of the parents was present at the mination. The parent was asked whether the ld had ever had whooping-cough, and the children each age were classified according to whether the ly was affirmative, doubtful, or negative. Out of 38 children aged 3, 4, 5, 6, or 7 in this category mined between April 26th and July 20th, 1932. replies were doubtful in regard to 227. The ubtful cases were therefore omitted entirely and the portion of affirmatives in the total of affirmatives d negatives was taken to represent the proportion all children attacked by whooping-cough up to mean age of the group in question.

Combining all the metropolitan boroughs the result was as shown in Table V.

The irregularity in the steps by which the percentages increase is partly accountable for by the fact that the mean ages of the groups are not necessarily 3½, 4½, &c., but are influenced by the rules as to ages at which children enter school. The group of entrants aged 5 last birthday has doubtless a mean age less than 5½, and the group of entrants aged 4 last birthday has doubtless a mean age greater

TABLE V

Age last birthday ..	3.	4.	5.	6.	7.
Affirmative	427	1049	1381	433	40
Negative	781	1389	1686	390	35
Total	1208	2438	3067	823	75
Percentage having had whooping-cough	35·35	43·03	45·03	52·61	53·33

TABLE VI

Borough or boroughs.	Persons per—		Number with known history.				Number having had whooping-cough.				Per cent. having had whooping-cough. Aged—		
	Room. 1931.	Acre. 1931.	Aged last birthday.								3 last birthday.	5 exactly.	6 last birthday.
			3	4	5	6	3	4	5	6			
mpstead and Marylebone	0·76	49·9	19	30	36	4	9	15	11	4	40·8	40·3	59·7
estminster	0·76	51·8	10	35	32	21	3	12	12	13		35·9	
andsworth	0·79	38·8	98	242	361	85	40	112	175	52		48·2	
nsington	0·80	78·9	7	42	58	14	2	26	31	10		50·8	
wisham	0·81	31·4	43	127	226	45	22	60	98	23		45·3	
olwich	0·88	17·7	36	59	102	12	11	20	47	6		40·0	
ddington	0·90	106·8	25	57	53	13	13	25	25	7	36·1	45·5	54·0
elsea and Fulham	0·92	88·7	61	96	165	42	22	37	65	16		39·0	
eenwich	0·94	26·2	80	66	71	18	26	24	28	8		37·9	
mberwell	0·96	56·1	58	148	165	41	19	75	65	21		45·0	
mbeth	0·97	72·5	45	141	280	78	13	60	136	33		45·6	
ckney and Stoke New- ngton	0·98	64·2	90	180	238	76	35	81	107	45		45·0	
ttersea	0·98	73·8	68	151	184	36	26	71	74	20		43·6	
mmersmith	1·01	59·3	65	149	148	51	22	68	80	36	34·4	49·8	
lborn and City of London	1·04	46·0	9	17	21	15	4	8	6	7		37·9	
rmondsey and Deptford	1·10	74·5	77	161	125	32	31	71	59	16		45·6	
ington	1·12	104·1	31	48	109	52	3	21	66	38		52·1	
Pancras	1·13	73·5	30	36	65	20	13	9	33	9		37·9	
plar	1·25	66·5	65	134	105	23	21	51	48	14	31·7	41·9	41·1
thwark	1·28	151·7	49	90	77	16	14	32	24	6		33·4	
pney	1·33	127·5	147	241	236	72	45	92	97	30		39·6	
thnal Green, Shoreditch, insbury	1·40	137·2	95	188	210	57	33	79	94	19		43·4	

to sex, age, and month of the year when whooping-cough began, shown in Table II., indicates that from October to January the ratio of girls to boys, based on 1383 cases, was 1·0073; from February to April, based on 1339 cases, it was 1·2206; and from May to September, based on 1166 cases, it was 1·2337. Stated in another way, the percentages of females were respectively 50·18 ± 0·91, 54·97 ± 0·92, 55·23 ± 0·98, the differences between the first and second, or first and third, being four times their probable errors.

TABLE II

GREENWICH WHOOPING-COUGH CASES 1919–29 ANALYSED ACCORDING TO SEX, AGE, AND MONTHS OF ONSET

Age-group.	October to January.			February to April.			May to September.			Total ratio F : M.
	Cases.	Per mille.	Ratio F : M.	Cases.	Per mille.	Ratio F : M.	Cases.	Per mille.	Ratio F : M.	
0–	182	132	0·948	190	142	1·151	154	132	1·160	1·008
1–	181	131		157	117		136	117		1·106
2–	130	94		147	110		116	99		
3–	193	140	1·045	189	141	1·234	153	131	1·210	1·157
4–	218	157		186	139		174	149		
5–	240	173	0·936	241	180	1·363	232	199	1·287	1·176
6–	124	90		130	97		95	82		
7–	52	37	1·446	54	40	1·250	56	48	1·465	1·234
8–	23	17		16	12		12	10		
9–	10	7		8	6		10	9		
10 and over.. ..	30	22		21	16		28	24		1·821
Total	1383	1000	1·0073	1339	1000	1·2206	1166	1000	1·2337	–

The sex ratio in the census population under 10 being 0·9750, it is evident that in the autumn months and January girls under 10 were about 3 per cent. more susceptible to contract whooping-cough than boys, but during the rest of the year girls under 10 showed an excess of about 25 per cent. in susceptibility in comparison with boys. In January, February, and March the ratios were 1·0404, 1·1900, and 1·1734 respectively, the equivalent percentages of females being 50·99 ± 1·58, 54·34 ± 1·60, 53·99 ± 1·45. The month of April gave the highest ratio, 1·3355; in September it was 1·2462, and in October, which gave the lowest ratio, 0·8889. This seasonal difference in sex ratio is only apparent at ages under 7, as shown in Table II. The per mille distributions of ages show that whooping-cough does not tend to attack younger or older children to any significantly different extent in winter and summer.

Separating the Greenwich cases into three groups, (*a*) "primary" cases followed by one or more subsequent cases in the same house starting between four days and three months after; (*b*) "subsequent" cases as above defined; (*c*) cases not included in (*a*) or (*b*), the percentage of females were as shown in Table III.

TABLE III

—	Oct. to Jan.			Feb. to Sept.		
	M.	F.	Per cent. females.	M.	F.	Per cent. females.
(*a*) ..	90	86	48·86 ± 2·54	115	146	55·94 ± 2·08
(*b*) ..	89	88	49·72 ± 2·53	156	185	54·25 ± 1·82
(*c*) ..	510	520	50·49 ± 1·05	854	1049	55·12 ± 0·77

(*a*) Primary. (*b*) Subsequent. (*c*) Other.

This shows that the increased liability of girls during a part of the year was equally evident whether they contracted whooping-cough outside or inside their homes.

Sex- and Age-incidence in Battersea

In Battersea the excessive liability of girls to whooping-cough was much less pronounced. This is shown in Table IV. The ratio of girls to boys in the census population was also higher, and at all ages under 10 in 1921 the sexes were approximately equal in numbers, the ratio being 1·002. There was therefore at ages up to 7 an excess of only 5 per cent. in the liability of girls to whooping-cough, compared with 15 per cent. in Greenwich, but at all ages over 7 combined there was in each borough an excess of about 40 per cent. Amongst the "primary" cases, here defined as those which were followed by another case in the same house after an interval of 4 to 28 days, the sex ratio at ages under 10 was 1·201, which is apparently but not significantly higher than the ratio for other cases. No significant difference was found in the ratios in different epidemic phases. The distribution of primary cases by age in Battersea shows a relative excess of children at ages 4, 5, and 6 above the expected numbers based upon the distribution of all cases under 10 years of age; the actual number at these ages was 403 out of 715, and the expected number 322. The chance of such a distribution of primary cases arising by random sampling is less than one in a million. It is evident that children at these ages are more liable to infect their brothers and sisters than are younger or older children. Thus 14·8 per cent. of the children at ages 4, 5, and 6 were followed by a secondary case after an interval of 4 to 28 days, whereas 9·4 per cent. of children of other ages under 10 were so followed.

When the distributions according to age during different phases of the epidemic cycle are compared with the expected figures, a slight excess of children at ages 3 to 6 and a corresponding deficiency at ages under 3 is noticeable during the rising epidemic phases. There is also a relative excess of babies attacked in the interepidemic periods.

Incidence with Age in Different Parts of London

During the spring and summer terms of 1932 a special inquiry was carried out by the school medical officers of the London County Council to ascertain what proportions of children entering school at ages 3, 4, 5, and 6 had suffered from an attack of whooping-cough. The main purpose of this inquiry was to discover what fraction of the total incidence of whooping-cough at pre-school ages is reported to the health offices in those boroughs where the disease is notifiable, and this aspect of it has been dealt with urally checked by the judge, whose reputation ds no defence here. It looks as though the ler of the girl had himself to thank if the jury unfavourably disposed towards the claim from outset. He had written a disingenuous letter to school authorities on the day after his daughter's ration, attempting to trap them into some nission which would prejudice their defence when al proceedings were initiated.

Noise Nuisance (Infants' School)

Another school was a less successful defendant in High Court last week, Mr. Justice Eve granting injunction against it to a neighbour who complained the din made by some 30 young children in a yground 36 feet by 23. The school prospectus s quoted to show that the teachers interfered little as possible and allowed the little pupils to velop their independence unchecked. The plaintiff's fe said she woke up every morning hoping for a t day because the children would then be kept doors; another witness said she prayed for fine ather because the children made so much noise if pt indoors. Mention was also made of dancing-sses, and of a bonfire on November 5th. The dge thought the dancing was no great matter, d it would really be intolerable, he said, if children uld not celebrate Guy Fawkes' Day with appropriate remony. The question of noise-nuisance is one of ace, time, and volume. The school was situated Fitzjohn's-avenue, Hampstead. There was no gal restriction preventing the existence of a school ere. A properly conducted school does not consti-ite an actionable nuisance. The plaintiff had to ow that the noise was excessive and was not roperly controlled, and that it seriously affected s comfort in his home. If it was no worse than e noise reasonably incidental to the carrying on a school of that kind, the plaintiff must put up with . The judge considered that the playground space as too small and that there were occasions when e teachers had failed to check noisy children. ut, in granting the injunction, the judge said he oped it would not be harshly used. He suggested at an enlargement of the playground space, paration of the elder from the younger children, d better supervision of any excessively noisy child ould probably suffice to keep the school from fringing its duty to its neighbours.

People who desire to take legal proceedings for e nuisance of noise should make methodical notes the annoyance of which they complain—a diary events is often useful. It is common knowledge at successful plaintiffs are often members of the gal profession who not only know their rights, but so know how to marshal and present the evidence support of their claims for protection.

IRELAND

(FROM OUR OWN CORRESPONDENT)

CHANGES IN ADMINISTRATION

Two important changes in administration have cently taken place in regard to health affairs in e Irish Free State. The National Health Insurance ommission has been abolished, and its place is ken by a controller directly responsible to the inister for Local Government and Public Health. he Commission was appointed in 1912, consisting of chairman and three members, of whom one was to be a medical practitioner and one a woman. The original members were Mr. (now Sir) Joseph Glynn, chairman, Mr. (now Sir) Walter Kinnear, Dr. W. J. Maguire, and Mrs. Dickie. Sir Walter Kinnear was transferred to London during the war years, and is now controller of National Health Insurance in England. His place on the Irish Commission was not filled. The other three commissioners remained in office until December 31st last, when the Commission itself was abolished. The medical profession will regret the change both on personal and general grounds. Although the profession and the Commission did not always see eye to eye, the relations between them had for many years been friendly. The presence of a medical man in the body of the Commission ensured that the medical point of view should be recognised there, and Dr. Maguire, who in his early years of office had to contend with many difficulties, had gained for himself the respect and friendship of the medical men who had business with him. It is doubtful whether a lay controller can be as independent as the Commission, but Mr. J. A. McCarron, who has been appointed to the office, has a long experience of the work of the Commission, to which he has been secretary for the past three or four years.

Another important change is the retirement from office of Mr. Edward Francis Stephenson, chief medical officer of the Department of Local Government and Public Health for the past ten years. Before his appointment to this office he had experience as a country dispensary doctor and as Local Government Board inspector. He took up duty at the moment when the establishment of the Irish Free State at once shook traditional methods of administration, and made possible schemes of reform in the public health services long overdue. The infant State was fortunate in having as its chief medical adviser a man well trained in administration and at the same time of progressive mind. The history of Mr. Stephenson's decade of responsibility is the history of a decade of steady and well considered reform in the health services. The county area of administration has been substituted for the poor-law union; the appointment of officers of local authorities has been entrusted to a central commission and freed from the unsavoury environment which formerly surrounded it; county medical officers of health have been appointed in the several counties; the local hospitals have been improved out of recognition; and, finally, the conditions of remuneration and service of the medical officers have been revolutionised. Some of these changes had been begun in earlier years, but their completion has taken place during Mr. Stephenson's term of office, and are largely due to his persistence and influence. His personal relations with the profession have always been of the happiest. Approachable, fair, and upright, he has commanded the respect and liking of his subordinates. With a high ideal of what professional conduct should be, he has insisted on a high standard of service, but he has also defended the members of the medical services against unfair criticism and imposition of every sort. Mr. Stephenson is a Fellow and member of Council of the Royal College of Surgeons in Ireland; a few months ago he was elected an honorary Fellow of the Royal College of Physicians of Ireland in recognition of his services to public health. It is understood that his place in the Department of Local Government and Public Health is to be taken by Mr. Robert Percy McDonnell, F.R.C.S.I.

NOTES FROM INDIA

(FROM OUR OWN CORRESPONDENT)

THE ALL-INDIA INSTITUTE OF HYGIENE

AN event of some importance in the history of medicine in India was the public opening of the All-India Institute of Hygiene and Public Health in Calcutta during Christmas week. The ceremony was to have been performed by the Viceroy, and many of those who were assembled in the fine reception hall, which is a feature of the new building, were surprised to see Sir John Anderson, the Governor of Bengal, arrive in the place of Lord Willingdon, who was indisposed. A gift from the Rockefeller Foundation, the institute was completed a year ago, and it was hoped that the six sections which the Government of India had promised to maintain would be opened at the beginning of last financial year, but nothing happened. We understood that it was decided to open the institute with four sections instead of six as promised, but even this remained as a paper decision, and the sanction for the appointment of the director and his assistant only arrived at the last moment. We all looked forward to an announcement by the Viceroy, or his deputy, that the institute was at least to commence work with its four sections this year, but no announcement was made. However, we understand that definite permission has now been granted to advertise the appointments, and it is hoped that within a few months the institute will be more than a mere building ; the four sections that are to be opened are public health administration, vital statistics, and epidemiology ; malariology ; rural hygiene ; and biochemistry and nutrition. The institute is to work in coöperation with the School of Tropical Medicine where hitherto the D.P.H. training has been carried out, and where some of the class-work will still be done.

PROGRESS OF RESEARCH

The Tenth All-India Research Workers' Conference was held in Calcutta again this year during the first week in December. The cloud of financial stringency still overshadowed the proceedings, but otherwise the conference was a distinct success. One of the noticeable features was the large attendance of provincial directors of public health. The exceptions were Bombay and Assam, which were represented by the director of the Haffkine Institute, and by the inspector-general of civil hospitals and the director of the Shillong Pasteur Institute, respectively. The Army sent two representatives. Altogether there were over 60 delegates. Major-General Sir J. W. D. Megaw, I.M.S., was the chairman. It was General Megaw who originally suggested, a little over ten years ago, that this conference should be held in order to obtain the opinion of research workers in different parts of India as to the best policy to adopt regarding the expenditure of the income of the Indian Research Fund Association which had been curtailed by the suspension of the annual grant. The grant was in time restored, but has again been cut, and, in order to save the trained personnel of the department from being disbanded, the research programme this year will have to be financed almost entirely out of capital. The future of research in India is thus not on a very sure foundation. However, it is the only thing to be done ; this capital was accumulated for a specific purpose, the building of a central research institute, a project which has now been practically abandoned, and it will always remain a source of grievance to the finance department and an excuse for withholding the research grant.

Colonel R. McCarrison made an impassioned appeal for the extension of research on the subject of nutrition and the establishment of a nutritional institute. We all heartily agreed with Col. McCarrison, but he almost defeated his own ends, because when the spell of his speech had passed off we began to wonder what had been the substance of his suggestions. However, his resolution on the subject was adopted unanimously by the conference.

The cholera research policy came in for some criticism ; there is a feeling that too much attention is paid to the subject of bacteriophage—undoubtedly an important aspect of the cholera problem, but rather a special aspect. Many delegates were disinclined to accept bacteriophage, as a curative and prophylactic agent, at the valuation of its enthusiastic supporters. There is no doubt that India, as a whole, is passing through a phase of very low cholera epidemciity, and the sceptics would like to reserve their judgment as to the prophylactic value of bacteriophage until there is an epidemic year. On the other hand there is little doubt that India is ahead of many other countries in bacteriophage investigations.

The Government of India's quinine policy was again discussed. The government have got themselves so completely tied up in their own red tape that they can do nothing. They have accumulated a stock of over 400,000 pounds of quinine. In these hard times they would much prefer the money this represents, but rules and regulations appear to stop them selling it at a price which anyone can afford to pay for it. So there it stays. General Megaw has a scheme for getting this quinine to the people at a reasonable price, and after years of struggling with the various departments he is now in a position to say that the scheme has made some progress and *may* be brought into operation within the year. We cannot help admiring his persistence and optimism.

The conferment of a K.C.I.E. on Major-General Megaw, which was announced in the New Year's honours list, will be very popular amongst all sections of the medical community in India. First as a clinician, then as a research worker, and finally as an administrator, Sir John has made for himself three separate reputations, each of high order.

BERLIN

(FROM OUR OWN CORRESPONDENT)

HEART DISEASE AMONG ENGINE-DRIVERS

Dr. Munk and Dr. Spiller, of the Martin Luther Hospital in Berlin, find that, according to figures supplied by the Engine-Drivers' Union, 24 drivers have, within one and a half years, suddenly died while on duty. Of those in active employment 130 died from sudden stoppage of the heart and 120 from cardiac diseases. The total represents 36 per cent. of all the causes of death in this occupation. In Germany, as a whole, only 16 per cent. of the male population over 20 years die annually from cardiac diseases, and the great number of deaths from heart diseases among engine-drivers is the more remarkable, as only men of apparently perfect health are appointed by the railways. The number of retired engine-drivers who suffer from cardiac disorders is also very great, and Munk and

Spiller have formed the opinion the cases must be regarded as occupational in origin. At the request of the union they examined 100 members suffering from cardiac troubles. These all complained of heart attacks with dyspnœa, the degree of the pain varying from slight pain to the typical symptoms of angina pectoris. The attacks were produced by strain and nervous excitement, and occurred less frequently during than after work, sometimes at night. In only 13 cases was valvular disease detected, and in 8 cases enlargement. Hypertony was rare. The electrocardiogram did not in the majority of cases give a sufficiently reliable result to decide whether an alteration of the myocardium or only a functional trouble was present. This question is very important for the medical officers of the railways, who have to decide whether a man may continue his service; whether, in order to recover, he should be sent to a sanatorium for a certain time; or whether he should be discharged. All the men examined stated that the great watchfulness and the feeling of responsibility which the work entails are a constant strain on their nervous systems, and that in many cases this strain has been increased by accidents. Some thought that the irregular hours of service, especially the alternation of day and night work, kept them from sleeping well. The great heat in the engine-driver's box is also mentioned as a possible cause. Some complained that they had too little bodily exercise, and thus suffered from adiposity; it is characteristic of this trade that an engine-stoker, who as such must work very hard, grows fat as soon as he is promoted to be an engine-driver, where he has to stand or sit quietly in his box. The results of the investigation show that mental strain is mainly responsible for the cardiac trouble, and that other factors, such as tobacco or spirits, have little or no effect.

OBSERVATIONS ON MEDICAL EDUCATION

Dr. Morawetz, the well-known professor of clinical medicine at Leipzig University, lately discussed some questions concerning medical training. He said that the principal difference between medical education in Germany and abroad is that in Germany theoretical study prevails, whilst in other countries the student comes in contact with the patient from the beginning. The average German student knows more than the average foreign student, while the latter has more practical experience. Generally speaking, the results in Germany are not worse than abroad—a fact also admitted by foreign experts. Prof. Morawetz does not consider it advisable to hold courses in sick nursing, as was suggested, because, owing to the great number of students, such courses would soon become mere lectures. It would be better to allow students to obtain practical experience by working in hospitals during the university vacations. The "numerus clausus"—i.e., a limited entry of students—is deprecated by Prof. Morawetz, as he thinks this might lead to much unfairness. There would be no guarantee that only the best pupils were admitted to the university, and it is known that many good medical men were by no means brilliant at school. Prof. Morawetz strongly opposes the increase of subjects for examination, for he thinks that the most important subjects—which for the medical man are internal medicine, surgery, and obstetrics—have already fallen somewhat into the background. It would indeed be better for some subjects, such as pathological physiology, social hygiene, and insurance medicine, to disappear from the examination. An extension of the curriculum would only lead to an increase of theoretical knowledge. The new regulation that no medical man is to be admitted to club practice without having been an assistant in a hospital is upheld by Prof. Morawetz because it means an increase of medical efficiency, though it means the student must wait rather a long time before he may enter practice.

CORPUS LUTEUM EXTRACT IN HABITUAL ABORTION

Dr. Wolfsohn, writing to the *Medizinische Welt* (1932, vi., 1616), reports that he has had good results in cases of habitual abortion by the administration of a corpus luteum extract called luteogan. This is an oily solution containing one rabbit unit per cubic centimetre, and in cases of bleeding during the early weeks of pregnancy it is given by intramuscular injection daily or every second day. The usual treatment by rest in bed and tinct. opii is of course given as well. Of ten cases treated seven went to term. In one of the unsuccessful cases there was a myoma, and in one a hydatiform mole, while in the third there was a history of prolonged amenorrhœa which suggested some form of endocrine disturbance other than deficiency of corpus luteum. In cases where in previous pregnancies there was bleeding at the time of the expected periods, luteogan treatment was continued at such times during the first few months. In the other cases it was not required after the subsidence of the hæmorrhage. Wolfsohn comes to the conclusion that this remedy should be tried in cases of early habitual abortion for which there is no apparent cause.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Lt. G. Rorison to be Surg. Lt.-Comdr.

H. L. Cleave to be Surg. Lt.

The following appts. are notified:—Surg. Comdrs.: A. W. McRorie, to *Ganges;* G. D. Macintosh to *Victory*, for R.N.B.; and W. F. Beattie to *Pembroke*, for R.M. Infirmary, Chatham.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Sub-Lt. G. H. C. R. Critien and Proby. Surg. Lt. W. Gough to be Surg. Lts.

Proby. Surg. Sub-Lieut. K. W. Martin to be Surg. Sub-Lt.

The following appt. has been made: Surg. Lt. W. M. MacGregor to *Victory*, for R.N.B.

ROYAL ARMY MEDICAL CORPS

Lt. W. J. Officer to be Capt.

TERRITORIAL FORCE

Maj. G. Young resigns his commn. and retains his rank, with permission to wear the prescribed uniform.

B. F. Longbotham (late Cadet Lce.-Corpl., Cambridge Univ. Contgt., Sen. Div., O.T.C.) to be Lt.

ROYAL AIR FORCE RESERVE

Flight Lt. E. A. Aslett is transferred from Class D (ii) to Class D (i).

INDIAN MEDICAL SERVICE

Lt. D. J. Young to be Capt. (prov.).

The undermentioned officers relinquish their temp. commns.: Capts. D. C. Datta and M. N. Rajan.

Mr. J. Currie, M.D. Lond., has been appointed Admiralty Surgeon and Agent for Anderton, Plymouth; and Mr. A. P. McEldowney, L.R.C.P. Lond., M.R.C.S., has been appointed Admiralty Surgeon and Agent for the London District, No. 11—namely, Barnes, Mortlake, and Putney.

SOCIETY OF PUBLIC ANALYSTS.—A meeting of this society will be held at the house of the Royal Society of Medicine, 1, Wimpole-street, London, W., at 8 P.M., on Wednesday, Feb. 1st. There will be a discussion, in conjunction with the food group of the Society of Chemical Industry, on the Changes taking place during the Storage of Fruits.

THE DOCTOR'S DAY

"Come, tell me how you live," I cried,
"And what it is you do!"

XII.—NEAR THE WEST AFRICAN COAST

THE chink of teacups on the tray put down just outside the mosquito house woke me, and I heard the sound of the steward's naked feet as he passed through the dressing-room to his daily work. It was 6.30 A.M. The sun was beginning to show bright points of light in the eastern sky, the cocks with their consorts were calling for their breakfast. The parrots in their commodious house downstairs were going through their vocabulary, wishing all who were within call "good morning," and almost in the same breath remarking "you old rascal." The baby leopards in their quarters at the back were squawking for the steward to come and fill their bottles with warm milk, and the usual morning noises proceeded from the compound. Dan Seriki, wagging his tail, came to the door of the mosquito house for his morning biscuit; he had earned his name ("son of a chief") on an occasion when he had been able to find a guinea-fowl which had fallen to my gun, after three boys had searched in vain for nearly ten minutes. Dan had, they said, "sense past three black men."

DISPENSARY ONE

By 7 o'clock I was downstairs and going to the garage for the car in which to proceed to the hospital and dispensary, about one and a half miles away. On my arrival at the hospital compound which encloses two main blocks—one the hospital with 16 beds, the other the administrative building consisting of a large waiting hall with open sides, consulting-room, dressing-room, dispensary, and office—I found a motley crowd of from 70 to 80 waiting for me, of all ages and of both sexes. They were admitted to the consulting-room in order, one by one, by my interpreter, who introduced them to me and gave me details of their troubles. Many of them were for daily dressings, and they were soon passed on into the adjoining room where they were attended to by several native dressers. These youths, recommended to me by the king of the town, I had been able to train to do simple dressings; and indeed they could put on fomentations and bandage as well as many who have received much better education.

The new cases were generally taken last to save time. As each patient came into the room the symptoms were related and I was able to follow most of what was said; but the language was a difficult one, and I felt on surer ground when I had an efficient translation. In passing, I may say I once asked my boy at dinner to bring the soup and he went at once to the pantry and fetched a carving-knife; alas I had used the wrong intonation, the words being spelt alike. At first I was perplexed because most of the patients said they were troubled by a "worm," and I began to think of ascaris or oxyuris, and sometimes tænia, but I soon found that to the native mind all pain was caused by a "worm," and the position in the body mattered not at all. The difficulty was increased by the fact that to be in the presence of the *Dokita*, as I was called, was causing a certain amount of alarm, but in time as my interpreter got to know the question which I asked as a routine I was able to get to the bottom of the matter. A large number of the patients came with surgical conditions. The natives abhor a deformity, and before the advent of European surgery were bound to suffer without relief; when they found that lipomas could be removed, or inguinal hernia cured, they began to take courage and come for treatment. As one was operated on the news spread. I removed from the back of a woman a lipoma weighing 20 lb.; on account of this she had been turned out of her home; she walked back 100 miles to show her cure, and in a week I had three similar cases from her village. They walked the whole way, carrying food and sleeping-mat.

But to return to my patients. Here is a mother carrying astride her hip a bonny boy with eyes like sloes, soft and velvety skin. He does not mind the strange surroundings and plays while his mother holds a long conversation with the interpreter. I wait patiently until the whole tale is told, for the African has a wonderful memory and will hear the whole story before he commences to interpret. A great calamity has befallen her. At 8 months old her boy has cut his two upper incisors before the lower ones, and she has come to see what the "white man" can do to help her. If a baby cuts the upper teeth first he will grow up to be a giant, and will turn every one out of the compound; even his own father and mother will not be treated differently from strangers. Surely the white man has some medicine which will prevent these troubles. I tell her that in my country it does not matter which teeth the baby cuts first; it is a red-letter day, friends come to congratulate the parents and nothing happens to the baby. I talk a long time and when I thought she seemed satisfied she broke out with a request that would I remove the offending incisors and then no evil could happen. I refused, and she went away sorrowful.

The next is a man with a foreign body in his conjunctival sac. It went in yesterday, and his friends had done all they could and failed. I inquired what had been tried. One man had been told off to hold up the top lid, a second to depress the lower, a third had stood in front of the patient and, filling his lungs to the utmost, had forcibly expired into the opened eye. When I used the usual methods, and showed him the offending body, his idea of the medicine of the white man was very high. The next had a fish-bone in his throat. He had tried without success the native method of treatment, which consisted in giving the sufferer a smart blow on the top of the head with the hope that the tonsil would recede and leave the bone free on the surface; no care being taken to avoid a possible dislocation of the vertebræ. A pair of forceps and a tongue depressor sent the man to join the group outside for a gossip before returning home. Then came one or two who wished to have teeth extracted, unheard of before the white man came; in most cases there was no trouble, as pyorrhœa had been allowed to get the upper hand.

The examination of recruits for police, of any school-boys who might be ill, and attendance on sick prisoners, which consisted mostly of minor injuries, kept me occupied until 9 o'clock, when I went home to breakfast.

DISPENSARY TWO

At 10 o'clock, taking my interpreter, I went to the town where the king had built a second dispensary to accommodate those unable for any reason to get to the other. This one was about two miles from the first. The native population of the town is nearly 80,000, the province being about 17,000 square miles in extent. My hospital is the only one in the province, my nearest colleague being 60 miles away to the south or 150 miles to the north. At the dispensary I found a number of children waiting in the verandah. They had small cuts or ulcers and were attended to by native dressers. There were a number of women with babies on their backs, and at a distance a crowd of men in the picturesque dress of the Haussas. They were there to see what was going to happen to the children, as they had been told by the *Registrar* to bring their wives and children to the *Dokita* and could not understand why. Every birth is reported to the man appointed by the king, who keeps a record of them for me. Month by month the six-months-old babies attend at the dispensary, when I examine them for general fitness, splenic index, and at times take smears to examine for malarial parasites. Then I vaccinate them. At first there was some dismay at the white man's medicine, but when it was explained that this would prevent small-pox there was not a murmur. All know the dire results of small-pox; blind and deaf children are seen on every hand. This elementary effort at infant welfare has been going on for several years, and the infant mortality-rate has fallen from 300–400 to nearer 200 per 1000 births.

By this time it is nearly noon, and as the sun is very hot I return to the hospital to do my morning round there. Most of the patients are convalescent. Several of them have had fractures, which are getting more numerous owing to the number of motor lorries running to the villages around. These lorries were licensed to carry 20 persons besides the driver and his apprentice, but more often than not there are nearer 30 crowded in, and a passenger may fall out or get under the wheels. One or two patients were recovering after radical cure of hernia or hydrocele. I was soon free to retire to the office where papers are typed by my dispenser, ready for the weekly mail to headquarters. One train up and one down to the coast complete the weekly service except when the mail-boat arrives, and once a fortnight the boat-train passes carrying our letters and newspapers, and there is a feverish rush for the post office.

VISIT TO AN OUTLYING STATION

As it was Saturday, and the day on which I usually visited the dispensaries in the district and did general inspection, I gave instructions for the labourers to proceed to my house and carry my loads to the station to catch the local train. My steward had already packed bed, bath, with all the pots and pans which he would need for my meals, chair and table, as it would be necessary for me to spend the night at a rest house. These are houses built by the natives themselves of mud, roofed with grass, with no doors or windows but with mud partitions to allow of two apartments. The floor was concrete, and in each village the chief deputed a man to brush it and have wood and water ready for any officials who might be coming to the village. Lunch having been enjoyed, and a rest necessary on account of the great heat, sometimes 100° F. in the shade, I started. The loads were sent on by train, while with the dog and my gun, in case we saw a guinea-fowl or partridge on the way, and my steward and interpreter behind, at about 3 P.M, I set out by car to do the 63 miles to my destination.

The road was quite good, although in places very hilly; we passed several villages and were saluted by the chiefs and headmen, of whom I made inquiries as to the presence of infectious disease and the like. When about half-way the sky was overcast by a swarm of locusts which came in through the windscreen and windows until both the dog and myself were obliged to protect ourselves. However, the swarm was not a large one, but farther on my journey I saw evidences everywhere of the destruction they had caused. In the maize farms not an inch of leaf remained; and where a day before there had been good crops, now there was nothing but a forest of stalks.

About 5.30 P.M. I arrived at my destination, and as the road to the rest house led past the chief's house it was not long before a procession was seen wending its way to salute me. The old chief led the way, and in the native fashion welcomed me to the town. I made inquiries as to his health and that of his family, his farms, the damage done by the locusts; then a small boy was beckoned forward, carrying a calabash which contained some eggs, and in the other hand a fowl. This was the offering from the chief, and my steward, knowing the custom, came to me for a threepenny-bit which was the perquisite of the small boy, the goods themselves being paid for when I settled up next day for the wood and water necessary for cooking and bath. The chief then retired, having told me that several patients wished to consult me, but as it was late they would come in the morning. Soon after a procession of women came with pots of water on their heads and poured it into large pots holding about 20 gallons which were permanent fixtures at the rest house. A man brought enough wood to supply the needs of the fire until the morning, and the steward and interpreter busied themselves in getting up my bed before the darkness set in.

There are outbuildings at each rest house for the kitchen, and sleeping-quarters for the staff, whose night requirements are a grass mat to lie on, and a cloth like a sheet in which to envelop themselves. After a hot bath and dinner I sat outside where I intended to sleep and, lighting my petrol lamp, set myself to enjoy a book; but soon the mosquitoes got so troublesome that I found it better to get inside my net and read there. I had put down a canvas bag for the dog, and I found I was more inclined to sleep than read. And so the day ended.

PANEL AND CONTRACT PRACTICE

"Personal Service"

THE extent to which a panel practitioner is bound to give treatment himself depends on the organisation of his practice. If he is single-handed without a partner he is not only personally responsible for providing adequate medical treatment for his insurance patients, but is also required to give the actual treatment himself. Obviously he could not be allowed to undertake to attend Mr. A when ill and then to send him on to someone else who could charge him for medical service. But regulations governing partnerships definitely provide that the treatment need not be given personally, though the insured persons' rights are protected by certain conditions. For example, continuity of treatment must be ensured whether the practitioner with whom the patient is insured, his partner, or his assistant is attending the case; further, the insured person can demand to be treated by the principal rather than by the assistant, but he has no such right in respect of a partner. Even the demand to be treated by the principal rather than by an assistant will not succeed if the principal is prevented from attending or is unwilling to attend by urgency of other professional duties, temporary absence from home, or other reasonable cause. In the case of partners then, personal service is not required, though when it comes to assistants the insured person has a stronger claim. Here the insurance committee endeavours to exert some pressure, for to employ a *permanent* assistant to do work under the panel requires the consent of the insurance committee. If such an assistant is appointed, and a scrutiny of prescriptions by the insurance committee indicates that the principal is not doing what they think is his fair share of the work they will try to withhold permission to employ an assistant. Refusal of this permission requires the acquiescence of the panel committee.

In the appeal case reported in our columns last week (p. 159), in which an elderly doctor won his appeal against the London insurance committee, the question of personal service was the main principle involved. It must not be forgotten that in connexion with these cases whoever is actually treating a panel patient, the principal is entirely responsible for all acts and omissions of the medical attendant, so that he does not escape blame if anything goes wrong.

The attitude of insurance committee members is curious when it is remembered that they are concerned with the interests of insured persons. In these days panel patients may be expected to complain if they do not receive the treatment they expect, or think themselves entitled to. Moreover the days when insurance practitioners were scarce have gone by. and most practitioners find competition increasing. Unless therefore an assistant in a practice is doing his work properly the principal is not likely to retain his services. The panel committees' point of view in these cases is probably the avoidance of "farming out" or the exploiting of one doctor by another. In the case in question there was no farming out at all. Almost unanimously the panel committee passed a resolution that he should be allowed an assistant, the grounds for this decision being that it was in the interest of insured persons themselves. Here was a practice admirably run by an assistant who was popular with the patients and well known to them. He refused to be a partner, preferring his position of assistant. If the opinion of the insurance committee had been upheld the fetish of "personal service" would have resulted in inconvenience to insured patients, with whom the assistant was popular, and hardship to the principal, to the widow, and children of the doctor whose practice he had taken over.

The question of permission by an insurance committee to employ an assistant arises only when this is to be a permanent arrangement. So far as we know no definition has been laid down what is a temporary arrangement. Possibly it would be held to apply to a whole-time assistant employed for more than a reasonable time required to tide over some emergency and might still count as a temporary assistant. But an assistant who became necessary to the principal's practice by reason of the numbers of his panel being higher than that allowed by regulations for a single-handed practitioner would certainly not rank as a temporary assistant. It is doubtful if permission is required for the employment of a part-time assistant.

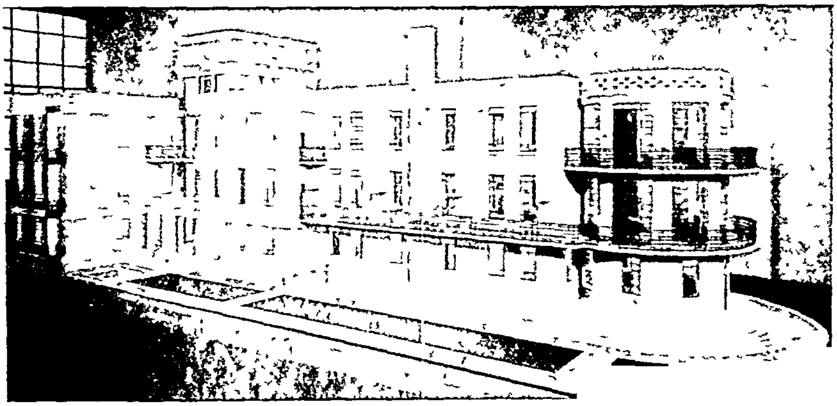
Permanent assistants are usually required to have their names placed on the panel list for the area, but insurance committees are disinclined to encourage such assistants to accept names of patients on their own lists, owing to the amount of clerical work involved when they move on to some other practice or area. If the names are all kept on the principal's list, no such clerical work becomes necessary when a change of assistant is made. Insurance committees cannot of course prevent an assistant from accepting patients for his own list, but they generally suggest to the principal that the acceptances should be for the principal. When subsequently prescriptions are scrutinised to discover the work being done by principal and assistant respectively, the percentages are calculated on the total numbers of the practice. This method of calculation makes it appear that the principal is doing less work than he actually is doing; for in many cases insured persons have joined the panel of this particular practice because they like the assistant and are really therefore his patients though counted for insurance purposes as belonging to the principal. There is probably very little difference from a regulation point of view between a deputy and a temporary assistant, for in either case signatures have to be on behalf of the principal—e.g., A, B, C, for Drs. X, Y, Z.

Deputising

The question of deputising was one of the deciding factors in the other appeal reported last week, also lost by the insurance committee. Here the work required for many of the insured persons in a London hospital was done by a non-panel medical man, but it was denied that he was the deputy of the superintendent of the hospital who was their insurance practitioner on the panel. Here the insurance committee held that a panel doctor was responsible for the certification of insured persons who never consulted him, but who of their own free will received treatment from another doctor, non-panel, and not even under the orders of the superintendent of the hospital where treatment was being given. Now in ordinary general practice many insured persons obtain treatment and certificates from other doctors, panel or non-panel, without the knowledge of their own insurance practitioner. How could he possibly be held to be responsible for such certification? In this case as in the other, the insurance committee, obsessed by "personal service" fetish, were discontented with arrangements under which the insured persons were receiving first-class treatment without cost to the drug fund, and because the certificate given to the insured person did not comply with the National Health certification rules. The obvious remedy for the societies concerned was to refuse to pay sick pay on such certificates. These certificates are always handed to the insured person and are his property. If they are not in order it is the patient's business to have them altered to conform to the rules of his society. The real irregularity was that the certificate from a non-panel doctor did not comply with the certification rules. The clerk of the committee tried to make a subtle distinction between breaking regulations and failing to comply with the regulations, but the legal authorities would not accept this, and the fact that the appeal of the medical superintendent of the hospital was allowed will give general satisfaction.

A PRESENTATION MOTOR AMBULANCE. — The employees' friendly society of the London General Omnibus Co. last week presented to the Manor House Hospital, Golders Green, a 20 h.p. Austin ambulance which cost approximately £800. During the past ten years the omnibus men have contributed over £61,000 to the hospital, and made grants exceeding £5000 in addition. The new ambulance replaces one given in 1926.

HEREFORDSHIRE GENERAL HOSPITAL MEDICAL STAFF.—By the rules of this Hereford hospital there are three honorary physicians and three honorary surgeons. At a recent meeting of the board of management a resolution was passed by 38 votes to 16 that the honorary medical staff should consist of such physicians and surgeons as the board should appoint. When, at the next meeting, the resolution came up for confirmation it was defeated by a majority of 26 to 19. The reasons advanced in favour of the change were that the work had greatly increased owing to the growth in the number of patients, and that in the last few years the nursing staff had gone up from 24 to 56. In opposing the confirmation on behalf of the honorary medical staff, Dr. F. O. T. Strange pointed out that in the last ten years the number of major operations had increased only from 743 to 818 in a year. He argued that it was necessary for the maintenance of his skill and knowledge that an honorary surgeon at a hospital should perform at least 300 or 400 major operations per annum, and produced figures from other hospitals in support of his contention. The board of management had been circularised against the confirmation of the resolution by the entire honorary staff of the hospital.

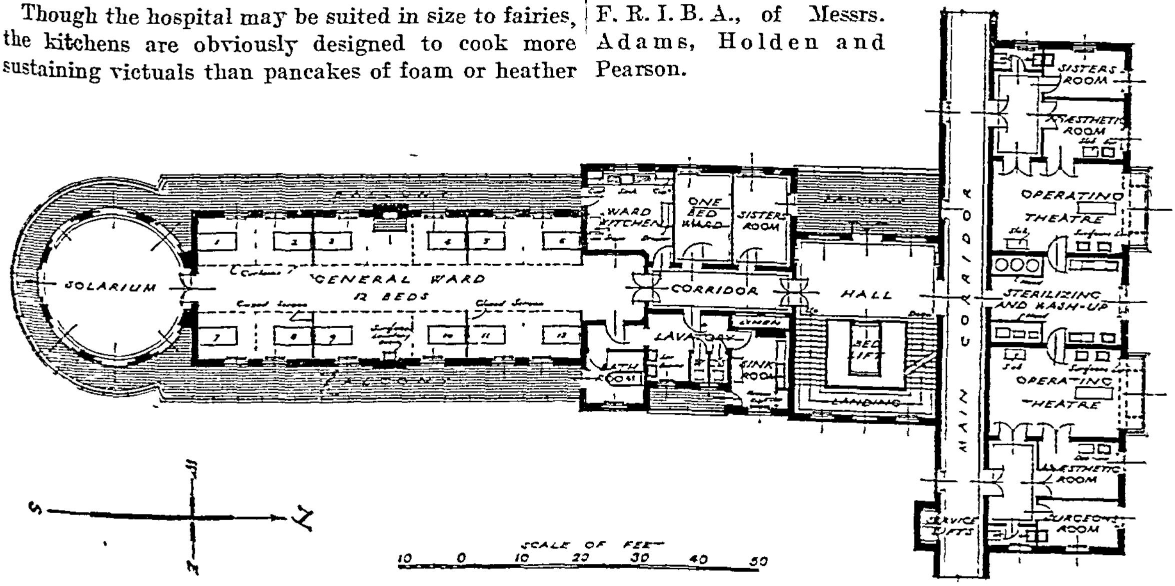


THE MINIATURE HOSPITAL

IN the three weeks of its exhibition at the Building Centre, 158, New Bond-street, the King's Fund model hospital has had more public attention than any other hospital in London. It interests the simple because it is a doll's house, the clever because it is ingenious, and the expert because it embodies the newest ideas of other experts. Those unfamiliar with the inner workings of a hospital can study it with an ease and detachment which is impossible in an establishment where the patients are of full size, the work non-stop, and visitors less welcome. The accompanying plan illustrates the information already given in THE LANCET (Jan. 14th, p. 95). It will be seen that the architects have once more adopted the arrangement by which the beds are placed parallel to the walls, and are partly separated from one another by glazed screens. The advantages claimed for this are that the patient has greater privacy, that he is no longer forced to face the light, and that the radiator which is usually placed under the window is near his feet instead of his head.

Though the hospital may be suited in size to fairies, the kitchens are obviously designed to cook more sustaining victuals than pancakes of foam or heather ale; the visitor hears talk of such technical things as steam-jacketed boiling pans with draw-off cocks. There are roasting and baking ovens, a grill, and in the centre of the kitchen is a gas-heated hot-plate. The kitchen can provide for 300 patients and staff, and everything is designed to ensure cleanliness. The lift has a speed of 90 inches a minute, and the liftman seems to find no difficulty in operating it.

The list of firms who have collaborated in the construction and equipment of the model is impressive. Material has been drawn from far and wide; if London provided the bodywork of the motor ambulance, the chassis had to come from Birmingham. No fewer than a dozen kinds of wood have been used in the different parts of the buildings and fittings. The task of building the hospital was made even more difficult by the fact that it had to be strong and compact to stand the long journeys it will make; for people all over the country can look forward to seeing the hospital when it leaves Bond-street. There, however, it remains until Feb. 4th; and there it should be seen. The architect is Mr. Lionel Pearson, F.R.I.B.A., of Messrs. Adams, Holden and Pearson.



CORRESPONDENCE

INFLUENZA

To the Editor of THE LANCET

SIR,—In view of the widespread desire for information of practical value concerning the ætiology of influenza it is perhaps a little rash to broach this matter at all. Nevertheless, I do venture to ask whether your leading article in THE LANCET of Jan. 21st, p. 149, admirable though it be as a summary of recent work on colds, is not too pessimistic on the subject of influenza?

Consider, for instance, the illuminating experiments made in Japan on 52 doctors and nurses who volunteered for this purpose at the time of the pandemic of 1918, and reported in THE LANCET (1919 i., 971) by Yamanouchi, Sakahami, and Iwashima. The sputa of 43 cases of influenza were emulsified in Ringer's fluid. This emulsion was injected into the nose and throat of 12 healthy persons, and the Berkefeld filtrate into 12 more. The results were very striking: among the subjects were 6 who had recently had influenza, and these escaped; the remaining 18 all developed influenza after an incubation period of two to three days. A filtrate of the blood of influenza cases was now injected into the nose and throat of six more healthy persons: the results were precisely the same as in the previous experiments. They next tried the subcutaneous route: four healthy persons received filtered sputum, and four filtered blood; all, with the exception of one who had previously had the disease, developed influenza after an incubation period of two to three days. On the other hand, a pure culture of Pfeiffer's bacillus and a mixture of Pfeiffer with pneumococci, streptococci, taphylococci, and diplococci from the sputum of influenza patients was sprayed into the nose and throat of 14 healthy persons, but no symptoms and no illness followed. Yamanouchi and his colleagues concluded that influenza is due to a filtrable virus which is present in the sputum and blood of influenza patients, and can infect either by implantation on to the mucous membrane, or by inoculation, and that Pfeiffer's bacillus and other bacteria found in the sputum are not the cause of influenza. They point out that all the subjects who had influenza, or who received the sputum emulsion or its filtrate became immune.

These human experiments could be repeated, if necessary, provided that a sufficient sum of money was set aside for the necessary accommodation, equipment, and, possibly, compensation. But it would be desirable first of all to see if the main points could be worked out on the lower apes or other animals, and here the following experience may be of interest. When a sharp outbreak of influenza occurred among the nursing staff at St. Bartholomew's in January, 1922, and material could readily be obtained during the first 24 hours of the attack, a number of nurses who were warded in the acute stage were asked to blow their noses into small pads of cotton-wool. These pads were at once dropped into a flask containing about 200 c.cm. of normal saline, and were shaken. The fluid was then taken to the laboratory, passed through an ordinary Berkefeld filter, and one half of the filtrate was heated to 56° C. for 30 minutes. A pair of guinea-pigs, rabbits, and rhesus monkeys were now injected intracerebrally with the filtrate, one of each pair receiving the raw material, the other the heated. The result was as follows: There was no difference in the effect on the two guinea-pigs or the two rabbits, all of which escaped disease. The day after inoculation, also, there was no difference between the two monkeys. On the next day, however, whereas one monkey was well, the other appeared to be having a typical attack of influenza with other symptoms suggestive of encephalitis. It remained in that state for five days and then recovered. The affected monkey was the one that had received the unheated filtrate: the other escaped illness.

This is, of course, merely a single experiment, but it could easily be repeated if the opportunity occurred of obtaining material at the onset of an outbreak in a hospital with an adequately equipped bacteriological department, where rhesus monkeys happened to be available, as in this particular instance. In view of the steady progress that is being made in our knowledge of the viruses, I would submit that the outlook as regards influenza is one of confident hope rather than anything else. At its worst, the position is far better than the state of affairs as regards small-pox before the work of Edward Jenner.

I am, Sir, yours faithfully,

London, W.C., Jan. 21st, 1933. M. H. GORDON.

EFFICIENT MEDICAL SERVICE

To the Editor of THE LANCET

SIR,—The subject of your leading article of Jan. 7th concerns a large part of the population. It affects not only those included in the National Insurance scheme but many persons with small incomes, and also those who are earning what may be considered a comfortable salary but have no reserve to fall back upon in case of incapacity from illness. An increasing number of such persons are compelled to seek hospital treatment. They desire to have specialised treatment but cannot afford the cost.

Specialised treatment is often necessary to remove localised disease; it is also true that when disease is generalised and severe, if anything can be done at all beyond keeping up the patient's strength, specially skilled treatment is needed. People when they fall sick and do not soon recover often believe that their own doctor has not the skill necessary to diagnose their complaints; or if he has, that he has not adequate means of treatment at his disposal. In cases which require special methods of illumination to see the affected organ the public are probably right. No practitioner who sees only occasional cases has the opportunity of becoming so adept in manipulating the instruments and so skilled in recognising what is visible as the doctor who confines himself to the sort of practice requiring them.

With regard to the second assumption—namely, that he has not as a rule adequate means of treatment at his disposal—the public is again often right. If we leave out the large group of temporary ailments—coughs, colds, indigestion, &c.—which recover quickly with medicine and directions, there are a great number of cases of physical disability which might be temporary but may become permanent. Such are disability of the feet, as a result of temporary ill-health or of a period of malnutrition, weakness of the abdominal walls, and displacement of the abdominal organs following childbirth or an acute illness and imperfect convalescence; and rheumatic changes, neuritis, or neuroses following an-injury or a sprain. Rarely has the practitioner the equipment in his surgery to deal with these. Being short of apparatus he lacks the knowledge derived from experience in its use. For such cases specialised treatment is advised and sought. This may be obtained at the out-patient department of hospitals or at special clinics. How are such cases to be treated without a great expenditure of time on the patient's part? The poor especially have to pay heavily in discomfort, loss of work, and in suffering as well as in time when they are affected. Four solutions can be suggested.

1. Enlarge hospital out-patient departments, increase the staff, and organise the attendances just as you would in a business or in a factory. Attach out-patient departments to what were once the poor-law infirmaries but are now well-equipped hospitals.

2. Extend municipal clinics. Many municipalities provide an excellent school medical service. When the boys and girls now at school grow up will they not ask, Why not continue it for us?

3. Attempt to induce some wealthy approved or insurance society to set up clinics for the treatment of those who insure with them. An appeal might be made to the new rich to assist the new poor in setting up such clinics.

4. The establishment of "medical houses" owned by medical practitioners. A start might be made by a number of medical men who could afford it putting down in common enough money to buy a house, equip it with apparatus for physical treatment, engage sufficient nursing help, and also a clerical staff to arrange appointments and keep records and the books. The spirit of exclusiveness should be absent from a medical house; any medical man who decided to pay a share either in starting the house or in paying rent for his room would be able to see all his patients there and treat them there as well. The attempt should be made in a small way at first till the scheme was tested, its strong points ascertained, and its weak points ascertained and remedied. As the doctors would own the medical house and be responsible for its expenses the incentive to effort to make it a success and a paying proposition would be strong. The incentive to effort on the patient's part, if he is not worn out by long and ineffective treatment carried out in an unbusinesslike manner, would also be strong. He wants to get well. Some patients would prefer to pay for treatment when they needed it; others would prefer to enter into some insurance scheme so as to be assured of treatment if and when they needed it. The medical house should be run on a cash basis. This would be easier than medical practice is at present. There would be an office at which payment would be made for any physical treatment given. The pooling of overhead charges would result in a reduction of expenses to the medical men. This would enable them to concentrate on developing methods of treatment. The result of establishing such a medical house would be that the standard of everyday medical treatment would be greatly raised. Moreover, the public would have their confidence increased.

It would follow that approved specialists in radiology, pathology, and other recognised branches would attend at stated intervals. They would pay their share in the expenses of the medical house and receive payment for their work. The problem of the out-patient department of our hospitals would in course of time be solved, to the great benefit of the hospital, the patients, and the doctors. The backbone of the profession, the general practitioner, would gain in skill, work, and reward.

The fourth alternative is the one which I prefer.

I am, Sir, yours faithfully,

London, W., Jan. 23rd, 1933. A. R. FRIEL.

MANCHESTER AND PASTEURISATION

To the Editor of THE LANCET

SIR,—Are we to remain apathetic while communities generally enlightened, such as Manchester, lose their "reputation for sound sense"? Your annotation (Jan. 21st, p. 152) makes me wonder what, after all, the medical profession as a body has done to lead public opinion on the pasteurisation of milk. If ever there was a case of "doctors differ, patients die," surely we have it here. The fine efforts of the Reading researchers have been made, through misrepresentation, partly responsible for Manchester's continuance to purvey tuberculous milk to the public.

The lead given by both the Ministry of Health and the expert committees working with the People's League of Health has shown us the road; Manchester in attempting to take that road has been worsted by the dragons in the path described as "organised vested interests." If the profession does nothing now it appears to be putting its own vested interests in alignment with those that have been successful in defeating Manchester's Bill. You invite Manchester to "think again"; but surely it is the whole medical profession up and down the country that should be thinking?

I am, Sir, yours faithfully,

ESTHER CARLING.

Berks and Bucks Joint Sanatorium, Peppard Common,
Jan. 23rd, 1933.

DERMATITIS FROM DYED FABRICS

To the Editor of THE LANCET

SIR,—Clinical observation and biological investigation have, I think, established that the dermatitis arising from the use of paraphenylenediamine and allied chemicals in hair and fur dyes is allergic in nature.[1] This clears the confusion which previously existed owing to the assumption that chemical irritation was causative.

The question of dermatitis arising from dyed fabrics must be dealt with on its merits as each case arises. The majority of cases will, no doubt, be dependent upon idiosyncrasy, as have all cases so far investigated by Dr. Killick and myself. The object of our paper (Jan. 14th, p. 77) was to draw attention to dermatitis resulting from the wearing of dyed fabrics, which had received little or no attention in the literature.

I am, Sir, yours faithfully,

Leeds, Jan. 21st, 1933. JOHN T. INGRAM.

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[1] Roxburgh, A. C.: Brit. Jour. Derm., 1925, xxxvii., 126; Percival, G. H.: THE LANCET, 1931, ii., 417; Ingram, J. T.: Brit. Jour. Derm., 1932, xliv., 422.

INSTITUTE FOR THE SCIENTIFIC TREATMENT OF DELINQUENCY.—A lecture on the Law of Scotland with reference to Young Delinquents will be given by Mr. George Morton, K.C., at 8.30 P.M. on Friday, Feb. 3rd, at University College, Gower-street, London, W.C. Dr. J. A. Hadfield will preside and admission is free. Particulars of further lectures may be had from the hon secretary of the institute, 56, Grosvenor-street, W.1.

OBITUARY

SIR PERCY SARGENT, C.M.G., D.S.O.,
M.B. Camb., F.R.C.S. Eng.

SENIOR SURGEON TO ST. THOMAS'S HOSPITAL AND SURGEON TO THE NATIONAL HOSPITAL, QUEEN-SQUARE; VICE-PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS, ENGLAND; HON. COLONEL, A.M.S.

IT is with sincere regret that we record the death in London on Sunday, Jan. 22nd, of Sir Percy Sargent, at the premature age of 59.

Percy William George Sargent was born in 1873, the eldest son of Mr. E. G. Sargent of Clifton, and was educated at Clifton College and St. John's College, Cambridge. In 1895 he entered St. Thomas's Hospital medical school, having obtained the University entrance scholarship. In 1898 he took the English double qualification, and in the same year graduated at Cambridge as M.B., B.Chir.; in 1900 he took the F.R.C.S. Eng. At St. Thomas's Hospital he had a brilliant record, and it is of interest that, while he was house surgeon, an astute observer, the late Mr. H. H. Clutton, predicted a great future for him in the surgical world—a prediction which has proved to be correct. He filled the junior posts at the hospital, and was appointed in sequence surgical registrar, resident assistant surgeon and demonstrator of anatomy, being elected in due course assistant surgeon. In 1905 Sargent, in coöperation with Prof. Leonard Dudgeon, gave the Erasmus Wilson lectures at the Royal College of Surgeons of England on the bacteriology of peritonitis, based on the work which they did together when Sargent was resident assistant surgeon, with unique opportunities for the investigation of the subject. The lectures were a forecast of Sargent's position. Those who were associated with Sargent and his work from his early surgical days realised that he had been provided by nature with the equipment—brains, eyes, and hands—essential for a great surgeon. He acquired a perfect technique, which combined with his clinical knowledge of surgery made it certain for him to gain a wide reputation in whatever sphere he elected to practise. It is not surprising that with such gifts he should have directed his attention at a comparatively early period of his career to neurological surgery, and in 1906 he was appointed assistant surgeon to the National Hospital, Queen-square. And not many years elapsed before Sargent was recognised as one of the outstanding personalities in the surgery of the nervous system.

SIR PERCY SARGENT

[Photograph by Hay Wrightson

With the outbreak of war, Sargent, in recognition of his special knowledge of cerebral surgery, was appointed consulting surgeon for head and spinal injuries to the B.E.F. in France. Here he worked in conjunction with Dr. Gordon Holmes, his colleague at Queen-square, who had been appointed consulting neurologist to the British Armies in France. Sargent was awarded for his services a D.S.O. in 1917, and received the C.M.G. in 1919. Some of the work performed in these critical times he recorded in the *Journal* of the R.A.M.C., but he was not a prolific writer, three papers, some sound articles on neurological surgery, and the articles on peritonitis and on the diseases of the vermiform appendix in Choyce's System of Surgery being his main contributions to medical literature. In 1928 the order of knighthood was conferred upon him, and in 1929, on the retirement of Sir Cuthbert Wallace from the staff of St. Thomas's, he offered his services to the medical school as part-time director of the surgical unit, being now senior surgeon to the hospital. His offer was welcomed by the governing body of the school, and he retained this appointment until a few weeks before his death. The students who had the opportunity to learn their surgery from him were fully conscious of the advantages which they were deriving. From the academic point of view he may not have been a great teacher, but his teaching was popular with the students because of the practical information he was able to impart, while his kindness to the many who went to him for help was little known to any outside his immediate circle, and was often unsuspected even by his colleagues at St. Thomas's.

Sir Percy Sargent was elected on the council of the College of Surgeons in 1923, and from that time gave much thought to the work of the College. In 1928 he was appointed a Hunterian professor and last year was elected vice-president, and throughout his term of office the affairs of the College of Surgeons were of primary importance to him. Among his other responsible posts, he was joint treasurer with Sir George Makins of the Imperial Cancer Research Fund, and hon. consulting surgeon to the Ministry of Pensions, while he had also acted as president of the neurological section of the Royal Society of Medicine. He examined in surgery at Cambridge, and had the reputation of scrupulous fairness. He gave a considerable amount of his time to work for the benefit of medical men and their dependents in financial distress, was honorary secretary of the Royal Medical Benevolent Fund and keenly interested in its development, and for many years intimately associated with the Invalid Children's Aid Association. He was a very keen Freemason, a Past-Master of several lodges, including the Cheselden and the Cliftonian, to the latter of which he had been secretary since its formation. In 1915 he was appointed Senior Grand Deacon of England. His easy manners and ready wit made him generally popular personally, and he was an excellent after-dinner speaker.

Sir Percy Sargent married in 1907 May Louise, daughter of the late Sir Herbert Ashman; her death in March, 1932, was a very serious blow to him; in fact, it is doubtful if he ever recovered from this loss. He leaves behind him two sons and one daughter, to whom we tender our sympathy.

A neurological colleague writes: "In the death of Sir Percy Sargent English neurology, and especially its surgical side, has sustained a serious loss. He was a direct successor of the founder of modern neurosurgery, Sir Victor Horsley, whose methods he studied conscientiously during the eight or nine years they worked together at the National Hospital, Queen-square, and adapted them to his own special aptitudes.

As Horsley and most other British surgeons who have specialised on the nervous system, he had the great advantage of coming to this branch fully trained and experienced in the principles and the technique of general surgery. Sargent's own special gifts were exceptional manual dexterity, rapidity in work and decision, accuracy and sureness of touch, and an imperturbability which carried him through many a sudden crisis and unforeseen difficulty. As his experience grew he became perhaps too conscious of the risk of radical operations in a field in which failure often meant disaster, but he was never bound by a rigid conservatism, and throughout his career he had few equals in the operative treatment of cerebral and spinal diseases.

"He rightly regarded his earlier years at Queen-square, when he frequently assisted and always worked in close collaboration with Horsley, as a period of training. His opportunity to put the experience he had then gained into practice came with the war, and he seized this opportunity promptly and with characteristic decision. As in the early days of the war the military authorities did not see their way to accept his special services, he went to France with the British Red Cross, and among the wounded of the battles of the Marne and Aisne studied the problems involved in the treatment of acute and often infected injuries of the nervous system, so that when he was later transferred to the R.A.M.C. as a consultant in neurology he was already familiar with the conditions on which he had to advise. His work in this sphere is too well known to need detailing; his tact, his obvious honesty of purpose, and his willingness to help in all circumstances made him a welcome adviser to hundreds of young surgeons. He took full advantage, too, of the opportunities provided by local lesions due to gunshot wounds to study many problems which could be less easily solved by the investigation of ordinary clinical material, and produced some noteworthy contributions to the scientific side of neurology. On returning to England he followed this work up in military hospitals, and later in the neurological hospitals of the Ministry of Pensions at Tooting and Richmond. It was on his work there that the well-known monographs on injuries of the peripheral nerves and of the spinal cord, published by the Medical Research Council, were largely based.

"At the end of the war his colleagues at the National Hospital, now without Horsley, were able to welcome him back and entrust to him much of the operative treatment of their patients. Here he worked continuously till his death, ever ready to give his best efforts to the care of his patients, and constantly anxious to adopt new methods which could improve or render more safe the operations which had gradually, as the years passed, become more complicated and more numerous. His manual skill remained unimpaired and at his death he was still at the height of his career as an operating surgeon. His recent resignation from the staff of St. Thomas's Hospital was welcomed by neurologists, as it was hoped that for many years Queen-square would have his undivided services, and that being able to devote more time to the work which interested him most he would place on record the results of his operations and the lessons to be learned from them. Unfortunately he has written little on neurology, as a busy professional life occupied his time fully, and a rigidly critical attitude towards his own work forbade him to put on record facts and opinions on which any doubt existed. His presidential address in 1921 to the section of neurology of the Royal Society of Medicine on epilepsy, and his papers on vascular tumours of the spinal cord and of the cerebellum are outstanding from his other valuable contributions to the literature. Sargent was universally recognised as a great surgeon and there can be no doubt he has left a lasting mark on neurology, but his chief monument will be the affection and respect he inspired in his professional colleagues and the gratitude of numerous patients who profited by his skill and were comforted by the confidence with which his personality imbued them.

"The outstanding features of his character were loyalty to his colleagues and a constant readiness to coöperate with them, devotion to the welfare of his patients, honesty in professional work and in private relations, and an optimistic enthusiasm which surmounted the disappointments which every neurological surgeon must meet. But to most of those who worked with him Sargent will best be remembered by his personal charm and his capacity for friendship."

MALCOLM EVAN MacGREGOR,
M.A. Camb., D.Sc.

WE regret to record the death of Dr. Malcolm MacGregor, director of the Wellcome Entomological Field Laboratories, Claremont, Esher (Wellcome Research Institution), which occurred at his home in Cobham on Jan. 12th, at the age of 43.

Malcolm Evan MacGregor was born at Port Elizabeth, South Africa, in 1889, the son of Robert MacGregor, of Durban, and his wife Clara Grace, daughter of Mr. John Redford, of London He received his scientific education at Trinity College, Cambridge, and Harvard, where he came under the influence of that great medical entomologist L. O. Howard and gained the Carnegie travelling fellowship in the subject, in which he also obtained a Cambridge research studentship in 1914. He first came into prominence during the war, when he served with the R.A.M.C. in East Africa in connexion with mosquitoes and other insect carriers of disease. From East Africa MacGregor was invalided home, and on recovery was placed in charge of a War Office Research Laboratory at Sandwich to study mosquitoes in their relation to the spread of malaria in this country from returned soldiers carrying the disease.

After the war he became the superintendent of the Entomological Field Laboratory, founded by Sir Henry Wellcome on the advice of the late Sir Andrew Balfour, director-in-chief of the Wellcome Bureau of Scientific Research. Here MacGregor continued his studies of mosquitoes, particularly with a view to solving some of the fundamental problems underlying their mode of life, feeding, hibernation, and reproduction. For a period these researches were interrupted by a visit to Mauritius on behalf of the Colonial Office to study the mosquito-malaria problem and to advise on methods of mosquito reduction. A valuable report on the conditions was submitted to the Colonial Office. In it was shown that a second important malaria-carrying mosquito occurred in Mauritius—namely, *Anopheles funesta*—which had been overlooked both by Ronald Ross and Andrew Balfour during their visits to the island. On his return to England MacGregor resumed his mosquito studies which have thrown considerable light on the food requirements and environmental necessities of these insects. He showed that the diverticulum, a sac which opens into the œsophagus of the mosquito, was a kind of reservoir into which the mosquito could direct at will or by reflex action fluids unsuitable for the stomach. He studied the extraordinary effect of ultra-violet rays on the larvæ, the various reactions of waters in which they occurred, and strove to establish the fact that the larvæ of culex and anopheles mosquitoes lived in waters of different but particular pH. Latterly he had been studying a so-called autochthonous race of *Culex pipiens,* a race which is able to complete its life-cycle without any blood meal, and which does not hibernate. These and other researches were in full swing at the time of his death and there was every promise that during the next few years most important and conclusive results would have been obtained. His death at the height of his scientific career, when many of his researches were about to bear fruit, is nothing short of a tragedy, inflicting a most serious loss upon the science of medical entomology.

Malcolm MacGregor was the author of numerous scientific papers dealing with the subjects of his particular study, and of a book entitled "Mosquito Surveys." He leaves a wife and two sons.

THE LATE SIR ROBERT JONES

Mrs. F. Chaplin Hall, secretary of the Association of Certificated Blind Masseurs, writes as follows: "No obituary notice regarding Sir Robert Jones, the famous orthopædic surgeon, is quite complete without reference to the important part he played in connexion with the blind massage movement in this country. The Association of Certificated Blind Masseurs, a professional body formed in 1919 to represent and safeguard the professional interests of blind masseurs and masseuses, had the honour to have Sir Robert Jones as its president from 1922, a position which he held up to the time of his death. The fact that Sir Robert consented to become the president was not only of inestimable value to the work of the Association, but gave a status and stimulus to the whole movement for massage by the blind. Sir Arthur Pearson, our first president, played the initial part in the formation of a band of educated blind men and women, comprising soldiers blinded in the war and men and women who had lost their sight in civilian life. Many of these took an active part in the treatment of the wounded in the later war period, and were anxious to band themselves together into a recognised body with strong medical backing. The death of Sir Arthur Pearson was a great misfortune for the movement, but Sir Robert Jones served us nobly."

Dr. Macalister writes: "Robert Jones began his career as a general surgeon, and at a very early age was on the staff of the Liverpool Stanley Hospital which he left in 1889 on appointment to the Royal Southern Hospital. It was here that he developed his orthopædic work to which from 1905 onwards he devoted his whole attention. He enlisted the interest of many workers in the out-patient department and also at his free Sunday morning clinics to which poor patients flocked from far and wide. His reputation as an original thinker and teacher brought surgeons from all over the world to his clinics and operations, which were always attended by large numbers of them. In connexion with his out-patient work he adopted the coöperation of the Child Welfare Association whose workers, after some training, kept an eye on the home conditions and feeding of the children. When a student his versatile capabilities were demonstrated at a very early period. He had a knowledge of literature far beyond that of his academic work, and this led to a capacity for debate which became cultivated in a small society, consisting of four students, which met at weekly intervals in the house of his uncle Mr. H. O. Thomas. Matters medical were, it is true, primarily discussed, mainly as a means of revising the week's work, but when these were completed papers were read and debated on literary, political, and social questions concerning which he in particular had very definite opinions. After qualification these four men invited other members of the profession and a number of laymen to join them, and thus in 1884 the progenitor of the Liverpool Medical and Literary Society, now approaching its jubilee, became formally constituted. One of the rules was 'The Society shall exist for the purpose of enabling its members to learn the art of speaking in public,' and there is no doubt that this object was and still is fulfilled. The membership of the society has included most of the leading members of the profession in Liverpool and many eminent in other work. Its 'after-meetings' were limited to a few enthusiasts who adjourned to a room in the basement and expended their pent-up physical energies by boxing, concerning which our friend was both an adept and an authority."

THE LATE MR. RICHARD GILL.—An error was made in our obituary notice last week with regard to the family of Mr. Gill's wife, Elizabeth Ann Bostock, who should have been described as the daughter of Deputy Surgeon-General John Ashton Bostock, C.B., of the Scots Fusilier Guards, honorary surgeon to Queen Victoria.

MEDICAL NEWS

University of Oxford

On Jan. 24th the degree of M.A. (honoris causâ), which was approved by convocation on Nov. 29th, 1932, was conferred on William Stobie, M.D. Edin. On Jan. 19th the degree of Bachelor of Medicine was conferred on H. F. Moseley.

University of Glasgow

The Harry Stewart Hutchison prize, of the value of about £50, for original research in a branch of medical science relating to children, will be awarded next year. The competition is not confined to members of the University of Glasgow. Particulars will be found in our advertisement columns.

Royal Sanitary Institute

At a sessional meeting of this institute, to be held at 90, Buckingham Palace-road, London, S.W., at 5.30 P.M. on Tuesday, Feb. 14th, Dr. J. S. Owens will open a discussion on Ventilation and the Need for New Standards.

The annual congress of the institute will be held at Blackpool from July 17th–24th under the presidency of Lord Cozens-Hardy.

British Congress of Obstetrics and Gynæcology

This congress will be held at Birmingham on April 5th, 6th, and 7th. The principal subject for discussion will be the Uterine Action and its Abnormalities.

Fellowship of Medicine and Post-Graduate Medical Association

Arrangements for next week will be found in our Medical Diary. A course of eight demonstrations on the Interpretation of Pyelograms will be given by Dr. G. Mather Cordiner, beginning on Wednesday, Feb. 8th, at 8 P.M. Forthcoming courses include a course in gynæcology at the Chelsea Hospital, Feb. 6th to 18th; a course in diseases of the chest, at the Brompton Hospital, Feb. 6th to 11th; a week-end course in physical medicine at the London Clinic and Institute of Physical Medicine, Saturday, Feb. 11th; and Sunday the 12th; and an evening course at the National Temperance Hospital, at 8 P.M., on Mondays and Fridays; Feb. 20th to March 17th. Lectures, courses, and demonstrations arranged by the Fellowship are open only to members, and further particulars may be had from the secretary of the Fellowship at 1, Wimpole-street, London, W.1.

World League for Sexual Reform

At a meeting to be held at the London School of Hygiene and Tropical Medicine, Keppel-street, W.C., at 8 P.M. on Wednesday, Feb. 8th, Dr. J. Leunbach, of Copenhagen, will speak on Abortion and Birth Control in Scandinavia.

Hospitals and Road Accidents

The Central Bureau of Hospital Information has, under legal advice, adopted a scheme which it is claimed will, if fully used, enable hospitals to recover up to £150,000 annually in respect of road accident cases. The plan, it is said, has already been adopted by a large London hospital and a small provincial one near a main road. The object is to get round the provision in the Road Traffic Act which limits the claim of a hospital against an insurance company to £25 by substituting a direct claim by the insured person. A reputable firm of local solicitors will be employed by the hospitals which will be responsible for the fees, and in return the patient will include in his claim the cost of his maintenance while in hospital. One of the advantages that it is hoped will result is the elimination of the "hospital chaser," the agent of a shady solicitor who follows up accidents in the hope of inducing injured persons to make claims through his principal. It is claimed that the scheme is applicable in all cases except the following: (1) hospitals whose constitution forbids them to make charges; (2) unwilling patients; (3) patients who for any reason are entitled to free treatment.

Hunterian Society

The annual dinner of this society will be held at the May Fair Hotel, Berkeley-street, London, W., at 7 for 7.30 P.M., on Thursday, Feb. 9th. The guests will include the Lord Mayor and the Lady Mayoress. The senior secretary is Mr. Andrew McAllister, 79, Wimpole-street, London, W.1.

North Staffordshire Royal Infirmary

The expenditure during the last financial year, the annual report states, exceeded the income by £7000, and there is now an accumulated deficit of £16,761. Ordinary income decreased by £1566, while ordinary expenditure rose by £2886. On the other hand, the extraordinary income was greater by nearly £12,000, mainly owing to a legacy of £10,000. There were 5896 in-patients, an increase of 451, and their average daily cost was 10*s.* 3*d.*, an increase of 10*d.* At 132,793 the out-patients' attendances fell by 11,320. In the special fracture clinic of the reorganised orthopædic department 2431 out-patients were registered, a large increase. The hospital is now a regional radium centre and accommodation for 12 male and 12 female radium cases has been provided, and the cases admitted from July 6th to Oct. 31st last year numbered 96. Private wards for 33 paying patients are to be provided immediately, the cost, £15,000, having been raised by an issue of 5 per cent. 20-year notes in multiples of £25 at par. Charges will range from four to eight guineas per week.

PUBLIC HEALTH SERVICES

Influenza

THE number of deaths from influenza reported from the 118 great towns in the week ended Jan. 21st was 1589, as compared with 120, 303, 681, and 1041 in the previous four weeks. For London itself the figure was 338, compared with 8, 25, 93, and 242 in the weeks before. In London, as already pointed out, no indication of unusual prevalence was observed until Dec. 24th–31st. During the week ended Jan. 14th the number of deaths from influenza in the 118 great towns corresponded to an annual death-rate of 2·64 per 1000. The rate for Greater London was less than this—namely, 2·36—whereas the midland area showed a rate of 3·25. The lowest incidence of deaths was in the south-west (0·91) and in Wales and Monmouthshire (0·98). The outbreak was still spreading, for only 8 of the 118 great towns failed to record a single death from influenza, compared with 29 in the previous week.

—	Ages 0–25		25–45		45–65		65 +		Total deaths
	Deaths.	Per cent.	Deaths.	Per cent.	Deaths.	Per cent.	Deaths.	Per cent.	
1932 Dec. 17th	15	17·6	9	10·6	21	24·7	40	47·1	85
" 24th	23	19·2	19	15 8	34	28 3	44	36·7	120
" 31st	43	14·2	70	23·1	89	29·4	101	33·3	303
1933 Jan. 7th	75	11·0	143	21·0	214	31·4	249	36·6	681
" 14th	112	10·8	196	18 8	336	32·3	397	38·1	1041

In Scotland, the infection has definitely abated in Glasgow, where in the week ended Jan. 21st there were 27 deaths, the figures for the three previous weeks being 86, 38, and 31. In Edinburgh the deaths during the corresponding four weeks numbered 5, 14, 25, and 19. Belfast reported 6 fatal cases in the week ended Jan. 14th, and on Jan. 17th the new notifications of influenza were stated to be 220.

In many parts of the country—though not in London—schools are closed, and although the infection is generally described as mild, it has been suggested that it especially attacks children and young people while it spares the old. It has been definitely stated, indeed, in one newspaper that the mortality is highest among the young, but no evidence of this appears in the accompanying Table, which shows the age-distribution of deaths from influenza up to the week ended Jan. 14th. It will be seen that so far the greatest proportion of deaths has been in the age-group 65 and over.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 14TH, 1933

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 18 (last week 16); scarlet fever, 1739; diphtheria, 780; enteric fever, 21; acute pneumonia (primary or influenzal), 3456 (last two weeks 2017 and 2816); puerperal fever, 28; puerperal pyrexia, 143; cerebro-spinal fever, 47 (last week 38); acute poliomyelitis, 8; acute polio-encephalitis, 2; encephalitis lethargica, 7; dysentery, 6; ophthalmia neonatorum, 82. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Jan. 17th–18th was as follows:—Small-pox 48 under treatment, 3 under observation (last week 52 and 7 respectively); scarlet fever, 1760; diphtheria, 1657; enteric fever, 10; measles, 274; whooping-cough, 524; puerperal fever, 25 (plus 7 babies); encephalitis lethargica, 229; poliomyelitis, 2; "other diseases," 317. At St. Margaret's Hospital there were 15 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there were no deaths from small-pox, 1 (1) from enteric fever, 27 (1) from measles, 8 (1) from scarlet fever, 40 (11) from whooping-cough, 30 (6) from diphtheria, 29 (9) from diarrhœa and enteritis under two years, and 1041 (242) from influenza. The figures in parentheses are those for London itself.

Outside London the largest number of deaths from influenza was again at Birmingham, where 91 were reported (last week 103). Other towns reporting numerous deaths from this cause were Manchester 49 (last week 22), Liverpool 41 (last week 23), Newcastle-on-Tyne 36 (last week 45), Portsmouth 35 (last week 19), Leeds 33(last week 14), Bristol 24, Gateshead 19, Coventry 16, Bolton and Stoke-on-Trent 15 each, Sheffield and Birkenhead 14 each, Barnsley and Sunderland 13 each. Measles caused 9 deaths in Birmingham and 3 in Liverpool. Five of the fatal cases of diphtheria were in Liverpool, and 5 of those from diarrhœa and enteritis were in Manchester.

The number of stillbirths notified during the week was 287 (corresponding to a rate of 45 per 1000 total births), including 41 in London.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Wednesday, Feb. 1st.—5 P.M., History of Medicine. Sir John Weir: Samuel Hahnemann and His Influence on Medical Thought. Casual Communication: Dr. E. W. Goodall: Note on the Liber de Febre Pestilentiali of Nicolas Massa.

Thursday.—8 P.M., T [illegible] Parasitology. Prof. Millais Ci [illegible] of Tropical Neurasthenia. M [illegible] of Psychiatry are invited to attend.

Friday.—10.30 A.M., Otology. (Cases at 9.30 A.M.) Discussion: Early or Late Operation in Acute Mastoiditis. Openers: Mr. Douglas Guthrie and Mr. Scott Ridout. Cases and specimens will be shown. 5 P.M., Laryngology. (Cases at 4 P.M.) Discussion: Malignant Disease of the Oropharynx, including the Fauces. Openers: Mr. G. Gordon Taylor, Mr. Norman Patterson, Prof. van den Wildenberg (Antwerp), and Prof. Naisin (Louvain). Cases illustrative of the discussion. 8.30 P.M., Anæsthetics. Paper: Dr. H. K. Ashworth: Nervous Sequelæ of Spinal Analgesia.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

Friday, Feb. 3rd.—8.30 P.M. (at Hotel Rembrandt, Brompton-road), Discussion on Artificial Pneumothorax, to be opened by Dr. Saxby Willis, preceded by dinner.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

Monday, Jan. 30th.—5 P.M., Mr. K. M. Walker: Perurethral Operations on the Prostate. (Hunterian lecture.)

Wednesday, Feb. 1st.—5 P.M., Mr. P. H. Mitchiner: *Treatment of Burns and Scalds. (Hunterian lecture.)*

Friday.—5 P.M., Mr. J. Paterson Ross: Sympathectomy as an Experiment in Human Physiology. (Hunterian lecture.)

UNIVERSITY COLLEGE, Gower-street, W.C.

Monday, Jan. 30th.—5.30 P.M., Sir Charles Sherrington: Flexibility of Reflex Action.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, Jan. 30th, to Saturday, Feb. 4th.—St. John's Hospital for Diseases of the Skin, Leicester-square, W.C. Course in Dermatology. Afternoon instruction in the Out-patient Department daily, and lectures at 5 P.M. on Tues. and Thurs.—Royal Free Hospital, Gray's Inn-road, W.C. A course of four demonstrations on Antenatal Diagnosis and Treatment, by Dame Louise McIlroy, at 5 P.M. on Friday, Feb. 3rd.—Medical Society of London, 11, Chandos-street, Cavendish-square, W. Tues., 4 P.M., Lecture on Some Important Injuries in the Upper Extremity (with lantern slides), by Major Meurice Sinclair. (Free to Members and Associates of the Fellowship.)

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

Monday, Jan. 30th.—10 A.M., Skin Department, Surgical Wards. 2 P.M., Gynæcological, Eye, and Genito-urinary Out-patients. 4.15 P.M., Lecture: Dr. Grainger Stewart: Compression Paraplegia.

Tuesday.—10 A.M., Medical Wards, Surgical Demonstration. 2 P.M., Throat, Nose, and Ear Out-patients. 4.15 P.M., Lecture: Dr. H. Pritchard: Chronic Infections.

Wednesday, Feb. 1st.—10 A.M., Medical Wards, Children's Medical Out-patients. 2 P.M., Eye Department. 4.45 P.M., Venereal Diseases Demonstration.

Thursday.—10 A.M., Neurological Department. 11.30 A.M., Fracture Demonstration. 2 P.M., Eye and Genito-urinary Out-patients. 4.15 P.M., Lecture: Dr. Shaw: Hæmatemesis.

Friday.—10 A.M., Skin Department. 12 noon, Lecture: Therapeutics. 2 P.M., Throat, Nose, and Ear Out-patients. 4.15 P.M., Lecture: Dr. Konstam: Auricular Fibrillation.

Daily, at 2 P.M., *Medical and Surgical Out-patients, Operations.* The Lectures at 4.15 P.M. are open to all medical practitioners without fee.

LONDON SCHOOL OF DERMATOLOGY, *St. John's Hospital,* 49, Leicester-square, W.C.

Tuesday, Jan. 31st.—5 P.M., Dr. A. M. H. Gray: The Sarcoids.

Thursday, Feb. 2nd.—5 P.M., Dr. J. A. Drake: Urticaria.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

Tuesday, Jan. 31st.—3.15 P.M., Mr. K. M. Walker: Disturbances of Micturition and their Treatment.

ST. MARK'S HOSPITAL, City-road, E.C.

Thursday, Feb. 2nd.—4 P.M., Dr. Cuthbert Dukes: Ulcerative Lesions of the Intestinal Tract.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

Friday, Feb. 3rd.—4 P.M., Mr. H. Kisch: Bronchoscopy in Diseases of the Chest.

ST. PETER'S HOSPITAL FOR STONE, Henrietta-street, W.C.

Wednesday, Feb. 1st.—3 P.M., Mr. R. Ogier Ward: Elucidation of Urinary Symptoms: Frequency of Micturition.

LONDON JEWISH HOSPITAL, Stepney Green, E.

Thursday, Feb. 2nd.—4 P.M., Dr. L. Mandel: Lecture-demonstration.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.

Wednesday, Feb. 1st.—4 P.M., Dr. C. E. Lakin: Demonstration of Medical Cases.

ROYAL INSTITUTE OF PUBLIC HEALTH, Queen-square, W.C.

Wednesday, Feb. 1st.—4.30 P.M., Dr. C. W. Buckley: Economics of Rheumatism.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

Thursday Feb. 2nd.—9 P.M., Mr. V. F. Hall: Modern Anæsthesia.

ST. MARY'S HOSPITALS, Manchester.

Friday, Feb. 3rd.—4.15 P.M. (at the Whitworth-street West Hospital), Dr. Fletcher Shaw and Dr. Bride: Antenatal Demonstrations.

GLASGOW POST-GRADUATE LECTURES.

Tuesday, Jan. 31st.—3.30 P.M. (in the Faculty Hall, [illegible] Prof. J. Hendry: Maternal [illegible] P.M. (at the Royal Hospital [illegible] White: Surgical Cases.

Appointments

Done, Janet M., M.B. Lond., has been appointed Resident M.O. to Horton General Hospital, Banbury.

Fison, J., M.D. Camb., Ophthalmic Specialist Medical Referee, under the Workmen's Compensation Act, for the Pontefract, Tadcaster, York, Ripon, and Harrogate County Court *Districts (Circuit No. 15).*

Mitchell, A. P., M.D., Ch.M., F.R.C.S. Edin., Medical Referee, under the Workmen's Compensation Act, for the Sheriffdom of the Lothians and Peebles.

London County Council.—Senior assistant medical officers (Grade II.): L. Houghton, M.R.C.S., Colindale Hospital; Smith, D. R. E., M.R.C.S., *St. Luke's Hospital, Lowestoft;* and Mitman, M., M.D. Lond., North Eastern Hospital. Assistant medical officers (Grade I.): Wesson, A. S., M.D., M.R.C.P. Lond., Archway Hospital: Dobbin, C. J. V., M.R.C.S., Bethnal Green Hospital; Fish, R. H., M.R.C.P. Lond., High Wood Hospital; Hargreaves, Flora, M.B. Lond., F.R.C.S. Eng., Mile End Hospital; Tanner, N. C., M.B. Brist., F.R.C.S. Eng., Lambeth Hospital; and Evans, R., M.B. Lond., Bethnal Green Hospital. [illegible] J. G., M.D. [illegible] M.B. Liver [illegible] W. J., M [illegible] Caplan, A., M.B. Lond., St. Pancras Hospital; and Kaufmann, Phyllis I., M.B. Manch., F.R.C.S. Edin., St. Charles' Hospital. Clinical [illegible] Ethelberta M., M.R.C.S., St. [illegible] physicians: Renbom, E. T., [illegible] St. Olave's Hospital; and Qui [illegible] St. Leonard's Hospital.

Births, Marriages, and Deaths

BIRTHS

Moncrieff.—On Jan. 19th, to Honor (née Wedmore), wife of Alan Moncrieff, M.D., M.R.C.P.—the gift of a son.

MARRIAGES

Blagg—Thomas.—On Jan. 16th, at St. James's Church, Piccadilly, S.W., Arthur F. Blagg, M.D., of Heathfield, Chilworth, Hants, to Mrs. Florence T. Thomas, of Carlton Mansions, Clifton, Bristol.

Little—George.—On Jan. 24th, 1933, at St. John's Presbyterian Church, Forest Hill, London, George Sinclair Ross Little, M.R.C.S., L.R.C.P., youngest son of the late Mr. David Little and Mrs. Little, of Cardiff, to Megan, eldest daughter of Mr. and Mrs. J. Evans George, of Forest Hill.

Paterson—Baxter.—On Jan. 23rd, at St. Columba's, Pont-street, S.W., Arthur Spencer Paterson, M.B., Swaylands, Penshurst, to Marie Antoinette Louise, daughter of the late Charles Baxter, W.S., and Mrs. Baxter, of Cheyne-walk, S.W.

DEATHS

Blair.—On Jan. 16th, at his brother's residence, Prestwich Mental Hospital, near Manchester, Matthew Cameron Blair, M.D., D.P.H., F.R.G.S., Honorary Consultant Nigerian Medical Staff (retired), and late Deputy Director, Sanitary Service, Nigeria.

Colby.—On Jan. 20th, suddenly, Francis Edward Albert Colby, F.R.C.S.

Grant.—On Jan. 16th, at Blackheath, after a long illness, Donald St. John Grant, I.M.S.

Sargent.—On Jan. 22nd, from pneumonia following influenza, Sir Percy Sargent, C.M.G., D.S.O., F.R.C.S., of Harley-street, London.

Thompson.—On Jan. 20th, suddenly, at East Sheen, Edward Charles Thompson, F.R.C.S.I., D.L.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

NURSING EDUCATION IN MANY COUNTRIES

THE series of volumes on "Methods and Problems of Medical Education" which have been published at intervals since 1924 by the Rockefeller Foundation have been brought to a close for the time being. The fact that the final volume is devoted to nursing education and schools of nursing is of real importance, since it implies recognition of the development of nursing as closely bound up with medical education. The contents of the volume include 17 articles on methods of training nurses in different parts of the world, and the picture presented is a little one-sided, since as many as 10 of the 17 articles relate to nursing schools in the United States or Canada; but it is not less interesting on that account, since the aims of nursing education in America evidently differ considerably from those in the old world. The point which will immediately strike the medical reader is the academic trend of nursing education in America. Five university schools of nursing are described, at which it is customary for students to take the degree either of bachelor or master of science in nursing; such university courses are not for the rank and file, but are designed to train potential leaders —a sort of educational grading.

In an article on the Cook County School of Nursing, Chicago, Miss Laura R. Logan, the Dean, states that nursing education in America as a whole is "bound to the tradition of a hospital school, created only or largely to give service to that hospital"; but no account of such hospital schools of nursing is included in this volume, and it seems clear that leaders of nursing education in America believe the advancement of their profession to be closely linked with the development of university schools. Miss Annie W. Goodrich, Dean of Yale University School of Nursing, writes: "The importance of university relationship cannot be over-emphasised, for it has made possible within a comparatively few years an evolution of the program of nursing education that could be realised only through the freedom for study, experimentation, and demonstration that such a relationship permits." Much that such a programme entails would fall outside the scope of nursing education as understood in this country. At Cook County School of Nursing, for example, the curriculum of the first year student includes the study of chemistry, bacteriology, pharmacology, drugs, and solutions, and during the second year courses of lectures on psychology, sociology, and economics are attended. The view of a group of medical men, quoted in another article, that the nursing profession is trying to make half-baked doctors out of nurses is set down as an attempt on the part of the medical profession to protect its own interests. It appears, however, that this doubt has assailed one of the leaders of the American nursing profession; Miss Shirley C. Titus, Dean of Vanderbilt University School of Nursing, writes: "There seems to be a tendency to forget the fact that the real function of the nurse is the act of nursing the patient. It would seem that in the American hospital the nursing function has been made a minor function, and the service demands of hospital groups, other than the patient, have been made the nurse's major responsibility." She attributes this misdirection of the nurse's energies to lack of sufficient nursing personnel in hospitals where the director has economised by cutting down the nursing staff, but it seems possible that the clinical side of nursing has also been pushed into the background in a curriculum overweighted with scientific theory. It is repeatedly stated by the writers of these American articles that throughout training the nurse is impressed with the relation of her work to the health of the community at large, and in this respect there is no doubt that the American nurse receives a sounder education than nurses in the old world. The public health aspect of nursing is regarded, in this country at all events, as a separate study, and the young nurse in training is not given a very vivid conception of her relation to the welfare and health of society as a whole.

The article by Miss Heaton on nursing in England included in this volume provides a good if necessarily condensed account of present conditions of nursing education in this country. Her survey includes an account of the syllabus for and conduct of the examinations leading up to State registration; of the preliminary training schools which some 60–70 hospitals have now established; of the supplementary parts of the State register; of the training of tuberculosis nurses; of post-graduate courses available for nurses; of hospital finance, and present-day tendencies in nursing. Her statement in a brief section on hours of work that it is customary to allow 45 minutes to nurses in training for midday dinner is unfortunately not true. Replies to the questionnaire issued by THE LANCET Commission on Nursing showed that in two-thirds of the hospitals only half an hour was allowed for this meal; and the recommendation of the Commission that this time should be extended to at least 40 minutes was evidently offered as the maximum time which would be likely to be conceded by hospitals throughout the country.

The training of nurses is evidently in a transitional stage in all countries; but it is safe to prophesy that where it is inspired by academic ideals to the neglect of clinical experience it will not provide the complementary service which medicine demands.

AN EMPIRE PROBLEM

THE material betterment of the conditions of native races is the aim which inspired Prof. Blacklock to write an essay on the house and village in the tropics.[1] He is anxious to create and maintain public interest in the development of the tropics, and suggests that an annual exhibition in London, where the existing village defects of various tropical countries could be fully demonstrated on the model of the Ideal Home Exhibition, would be a useful method of propaganda. In this book he does not deal only with housing, but discusses the growth of tropical medicine, the staffing of hospitals and medical services in the tropics, and the relation of tropical medicine to trade.

A section is devoted to a consideration of the native house and its attendant parasites, the jigger, the flea, the Tumbu fly, the Congo floor maggot, and various species of tick and bed-bug. The parasites which infest the roof (rats, ants, and other insects) are also considered, and the water-supply, which may convey cholera, typhoid, both forms of dysentery, ankylostomiasis, bilharziasis, or the Guinea worm.

This useful little work closes with a popular account of malaria, elephantiasis, sleeping sickness, and other filarial diseases. An entertaining chapter concerns the skin of the native child who, from the hour of its birth upwards, is subjected to a perpetual series of injuries and pin-pricks of every kind; this is an aspect of medicine to which too little attention has so far been paid. It would be interesting to pursue this study on psychological lines; such questions as the effect of the darkness of the tropical village, and of the impossibility of obtaining mental relaxation during the long hours of the night, are worth consideration. It is small wonder that the African often becomes a prey to the native magician. Those who intend to live in tropical Africa will do well to read this book, and even old-established residents there will find in it a fresh point of view.

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[1] An Empire Problem: The House and Village in the Tropics. By D. B. Blacklock, M.D., Professor of Parasitology, Liverpool School of Tropical Medicine, the University of Liverpool. The University Press of Liverpool. London: Hodder and Stoughton, Ltd. 1932. Pp. 100. 3s. 6*d*.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Wednesday, Feb. 1st.—5 p.m., History of Medicine. Sir John Weir: Samuel Hahnemann and His Influence on Medical Thought. Casual Communication: Dr. E. W. Goodall: Note on the Liber de Febre Pestilentiali of Nicolas Massa.

Thursday.—8 p.m., Tropical Diseases and Parasitology. Prof. Millais Culpin: An Examination of Tropical Neurasthenia. Members of the Section of Psychiatry are invited to attend.

Friday.—10.30 a.m., Otology. (Cases at 9.30 a.m.) Discussion: Early or Late Operation in Acute Mastoiditis. Openers: Mr. Douglas Guthrie and Mr. Scott Ridout. Cases and specimens will be shown. 5 p.m., Laryngology. (Cases at 4 p.m.) Discussion: Malignant Disease of the Oropharynx, including the Fauces. Openers: Mr. G. Gordon Taylor, Mr. Norman Patterson, Prof. van den Wildenberg (Antwerp), and Prof. Naisin (Louvain). Cases illustrative of the discussion. 8.30 p.m., Anæsthetics. Paper: Dr. H. K. Ashworth: Nervous Sequelæ of Spinal Analgesia.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

Friday, Feb. 3rd.—8.30 p.m. (at Hotel Rembrandt, Brompton-road), Discussion on Artificial Pneumothorax, to be opened by Dr. Saxby Willis, preceded by dinner.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

Monday, Jan. 30th.—5 p.m., Mr. K. M. Walker: Perurethral Operations on the Prostate. (Hunterian lecture.)

Wednesday, Feb. 1st.—5 p.m., Mr. P. H. Mitchiner: Treatment of Burns and Scalds. (Hunterian lecture.)

Friday.—5 p.m., Mr. J. Paterson Ross: Sympathectomy as an Experiment in Human Physiology. (Hunterian lecture.)

UNIVERSITY COLLEGE, Gower-street, W.C.

Monday, Jan. 30th.—5.30 p.m., Sir Charles Sherrington: Flexibility of Reflex Action.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, Jan. 30th, to Saturday, Feb. 4th.—St. John's Hospital for Diseases of the Skin, Leicester-square, W.C. Course in Dermatology. Afternoon instruction in the Out-patient Department daily, and lectures at 5 p.m. on Tues. and Thurs.—Royal Free Hospital, Gray's Inn-road, W.C. A course of four demonstrations on Antenatal Diagnosis and Treatment, by Dame Louise McIlroy, at 5 p.m. on Friday, Feb. 3rd.—Medical Society of London, 11, Chandos-street, Cavendish-square, W. Tues., 4 p.m., Lecture on Some Important Injuries in the Upper Extremity (with lantern slides), by Major Meurice Sinclair. (Free to Members *and Associates of the Fellowship.)*

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

Monday, Jan. 30th.—10 a.m., Skin Department, Surgical Wards. 2 p.m., Gynæcological, Eye, and Genito-urinary Out-patients. 4.15 p.m., Lecture: Dr. Grainger Stewart: Compression Paraplegia.

Tuesday.—10 a.m., Medical Wards, Surgical Demonstration. 2 p.m., Throat, Nose, and Ear Out-patients. 4.15 p.m., Lecture: Dr. H. Pritchard: Chronic Infections.

Wednesday, Feb. 1st.—10 a.m., Medical Wards, Children's Medical Out-patients. 2 p.m., Eye Department. 4.45 p.m., Venereal Diseases Demonstration.

Thursday.— [illegible] 11.30 a.m., Fracture [illegible] and Genito-urinary [illegible] Dr. Shaw: Hæmatemesis.

Friday.—10 a.m., Skin Department. 12 noon, Lecture: Therapeutics. 2 p.m., Throat, Nose, and Ear Out-patients. 4.15 p.m., Lecture: Dr. Konstam: Auricular Fibrillation.

Daily, at 2 p.m., Medical and Surgical Out-patients, Operations. The Lectures at 4.15 p.m. are open to all medical practitioners without fee.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

Tuesday, Jan. 31st.—5 p.m., Dr. A. M. H. Gray: The Sarcoids.

Thursday, Feb. 2nd.—5 p.m., Dr. J. A. Drake: Urticaria.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

Tuesday, Jan. 31st.—3.15 p.m., Mr. K. M. Walker: Disturbances of Micturition and their Treatment.

ST. MARK'S HOSPITAL, City-road, E.C.

Thursday, Feb. 2nd.—4 p.m., Dr. Cuthbert Dukes: Ulcerative Lesions of the Intestinal Tract.

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Friday, Feb. 3rd.—4.15 p.m. (at the Whitworth-street West Hospital), Dr. Fletcher Shaw and Dr. Bride: Ante-natal Demonstrations.

GLASGOW POST-GRADUATE LECTURES.

Tuesday, Jan. 31st.—3.30 p.m. (in the Faculty Hall, St. Vincent-street), Prof. J. Hendry: Maternal Mortality Investigations.

Wednesday, Feb. 1st.—4.15 p.m. (at the Royal Hospital for Sick Children), Mr. M. White: Surgical Cases.

Appointments

Done, Janet M., M.B. Lond., has been appointed Resident M.O. to Horton General Hospital, Banbury.

Fison, J., M.D. Camb., Ophthalmic Specialist Medical Referee, under the Workmen's Compensation Act, for the Pontefract, Tadcaster, York, Ripon, and Harrogate County Court Districts (Circuit No. 15).

Mitchell, A. P., M.D., Ch.M., F.R.C.S. Edin., Medical Referee, under the Workmen's Compensation Act, for the Sheriffdom of the Lothians and Peebles.

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Births, Marriages, and Deaths

BIRTHS

Moncrieff.—On Jan. 19th, to Honor (née Wedmore), wife of Alan Moncrieff, M.D., M.R.C.P.—the gift of a son.

MARRIAGES

Blagg—Thomas.—On Jan. 16th, at St. James's Church, Piccadilly, S.W., Arthur F. Blagg, M.D., of Heathfield, *Chilworth, Hants, to Mrs. Florence T. Thomas, of Carlton* Mansions, Clifton, Bristol.

Little—George.—On Jan. 24th, 1933, at St. John's Presbyterian Church, Forest Hill, London, George Sinclair Ross Little, M.R.C.S., L.R.C.P., youngest son of the late Mr. David Little and Mrs. Little, of Cardiff, to Megan, eldest daughter of Mr. and Mrs. J. Evans George, of Forest Hill.

Paterson—Baxter.—On Jan. 23rd, at St. Columba's, Pont-street, S.W., Arthur Spencer Paterson, M.B., Swaylands, Penshurst, to Marie Antoinette Louise, daughter of the late Charles Baxter, W.S., and Mrs. Baxter, of Cheyne-walk, S.W.

DEATHS

Blair.—On Jan. 16th, at his brother's residence, Prestwich Mental Hospital, near Manchester, Matthew Cameron Blair, M.D., D.P.H., F.R.G.S., Honorary Consultant Nigerian Medical Staff (retired), and late Deputy Director, Sanitary Service, Nigeria.

Colby.—On Jan. 20th, suddenly, Francis Edward Albert Colby, F.R.C.S.

Grant.—On Jan. 16th, at Blackheath, after a long illness, Donald St. John Grant, I.M.S.

Sargent.—On Jan. 22nd, from pneumonia following influenza, Sir Percy Sargent, C.M.G., D.S.O., F.R.C.S., of Harley-street, London.

Thompson.—On Jan. 20th, suddenly, at East Sheen, Edward Charles Thompson, F.R.C.S.I., D.L.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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NURSING EDUCATION IN MANY COUNTRIES

THE series of volumes on "Methods and Problems of Medical Education" which have been published at intervals since 1924 by the Rockefeller Foundation have been brought to a close for the time being. The fact that the final volume is devoted to nursing education and schools of nursing is of real importance, since it implies recognition of the development of nursing as closely bound up with medical education. The contents of the volume include 17 articles on methods of training nurses in different parts of the world, and the picture presented is a little one-sided, since as many as 10 of the 17 articles relate to nursing schools in the United States or Canada; but it is not less interesting on that account, since the aims of nursing education in America evidently differ considerably from those in the old world. The point which will immediately strike the medical reader is the academic trend of nursing education in America. Five university schools of nursing are described, at which it is customary for students to take the degree either of bachelor or master of science in nursing; such university courses are not for the rank and file, but are designed to train potential leaders —a sort of educational grading.

In an article on the Cook County School of Nursing, Chicago, Miss Laura R. Logan, the Dean, states that nursing education in America as a whole is "bound to the tradition of a hospital school, created only or largely to give service to that hospital"; but no account of such hospital schools of nursing is included in this volume, and it seems clear that leaders of nursing education in America believe the advancement of their profession to be closely linked with the development of university schools. Miss Annie W. Goodrich, Dean of Yale University School of Nursing, severe cases wh... importance of university relationship ...asised, for it has made possible wards for treatment. ... of the study, and the young nurse in training is not given a very vivid conception of her relation to the welfare and health of society as a whole.

The article by Miss Heaton on nursing in England included in this volume provides a good if necessarily condensed account of present conditions of nursing education in this country. Her survey includes an account of the syllabus for and conduct of the examinations leading up to State registration; of the preliminary training schools which some 60–70 hospitals have now established: of the supplementary parts of the State register: of the training of tuberculosis nurses; of postgraduate courses available for nurses; of hospital finance, and present-day tendencies in nursing. Her statement in a brief section on hours of work that it is customary to allow 45 minutes to nurses in training for midday dinner is unfortunately not true. Replies to the questionnaire issued by THE LANCET Commission on Nursing showed that in two-thirds of the hospitals only half an hour was allowed for this meal; and the recommendation of the Commission that this time should be extended to at least 40 minutes was evidently offered as the maximum time which would be likely to be conceded by hospitals throughout the country.

The training of nurses is evidently in a transitional stage in all countries; but it is safe to prophesy that where it is inspired by academic ideals to the neglect of clinical experience it will not provide the complementary service which medicine demands.

AN EMPIRE PROBLEM

THE material betterment of the conditions of native races is the aim which inspired Prof. Blacklock to write an essay on the house and village in the tropics.[1] He is anxious to create and maintain public interest in the development of the tropics, and suggests that an annual exhibition in London, ... existing village defects of various tropical ... be fully demonstrated on the model ...bition, would be a useful ... this book he does not ...iscusses the growth ...of hospitals and ...relation of

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Factors Affecting the Mortality of Burns

Before dealing with the mortality of burns and scalds, there are two important factors to be considered irrespective of the method of treatment used.

The first of these, as pointed out by Donald,[1] is that the improved social conditions in the homes of the poor, and the disappearance of the open light and open fire have done much to diminish the number and severity of burns coming for treatment to the great hospitals of the metropolis. Taking the figures from 1899–1903 at the London Hospital, he has shown that the mortality for the 999 burns and scalds admitted during those years was 25·3 per cent., whereas in 1924–28 the number of admissions had diminished to 286, or rather less than one-third, and the mortality had dropped to 6·6 per cent., although the treatment used was practically the same during both these periods. This he attributes largely to the passing of the Children's Act in 1908, which made it a punishable offence to leave a child alone in a room containing an open fire grate insufficiently protected, and he pointed out that in the years 1909–13, immediately following the passing of this Act into law, the number of burns admitted to hospital diminished by 50 per cent.

At St. Thomas's Hospital the figures are by no means so conclusive, for though the number of burns and scalds treated as out-patients is slightly smaller, the number of burns and scalds admitted to the hospital has remained very steady throughout a number of years, both before and after the passing of the Children's Act in 1908, and has been approximately 60 per annum from the year 1894 onwards

that whereas the average mortality for burns over the period of years from 1894–98 was 40 per cent., that for scalds for the same period was only 19 per cent. Again, during the period from 1900–1903 the average mortality from burns was 39·7 per cent., whereas from scalds it was only 7 per cent. Here it is of interest to note that in 1899 (Table II.) picric acid was used for burns and the mortality fell to 33 per cent., but the mortality of scalds, still for some reason treated by old methods, was 40 per cent. Again, from 1924–28 (Table I.) the mortality for burns was 15·5 per cent., but for scalds only 7·5 per cent., and from 1929–32, inclusive, the mortality was, burns 4 per cent., scalds 1·7 per cent.

The Registrar-General's mortality figures are unfortunately not helpful, for they give the number of deaths per million of population, and offer no indication of the relative number of non-fatal burns and scalds. They show a greater number dying from burns than scalds—20·8 burns and 18 scalds per million, all ages. It is startling and unexpected to find that the female deaths from burns are just over twice as great as the males throughout the period (1924–31), while in the case of scalds the proportion is 2 females to 3 males. Further, whereas the number of burns to scalds in the first period (1894–98) was 275 burns to 202 scalds, in the second period (1900–1903) it was 239 burns to 172 scalds; and in the third

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* Hunterian lecture delivered before the Royal College of Surgeons of England on Feb. 1st.

Medical Diary

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SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

WEDNESDAY, Feb. 1st.—5 P.M., HISTORY OF MEDICINE. Sir John Weir: Samuel Hahnemann and His Influence on Medical Thought. Casual Communication: Dr. E. W. Goodall: Note on the Liber de Febre Pestilentiali of Nicolas Massa.

THURSDAY.—8 P.M., TROPICAL DISEASES AND PARASITOLOGY. Prof. Millais Culpin: An Examination of Tropical Neurasthenia. Members of the Section of Psychiatry are invited to attend.

FRIDAY.—10.30 A.M., OTOLOGY. (Cases at 9.30 A.M.) Discussion: Early or Late Operation in Acute Mastoiditis. Openers: Mr. Douglas Guthrie and Mr. Scott Ridout. Cases and specimens will be shown. 5 P.M., LARYNGOLOGY. (Cases at 4 P.M.) Discussion: Malignant Disease of the Oropharynx, including the Fauces. Openers: Mr. G. Gordon Taylor, Mr. Norman Patterson, Prof. van den Wildenberg (Antwerp), and Prof. Naisin (Louvain). Cases illustrative of the discussion. 8.30 P.M., ANÆSTHETICS. Paper: Dr. H. K. Ashworth: Nervous Sequelæ of Spinal Analgesia.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, Feb. 3rd.—8.30 P.M. (at Hotel Rembrandt, Brompton-road), Discussion on Artificial Pneumothorax, to be opened by Dr. Saxby Willis, preceded by dinner.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

MONDAY, Jan. 30th.—5 P.M., Mr. K. M. Walker: Perurethral Operations on the Prostate. (Hunterian lecture.)

WEDNESDAY, Feb. 1st.—5 P.M., Mr. P. H. Mitchiner: Treatment of Burns and Scalds. (Hunterian lecture.)

FRIDAY.—5 P.M., Mr. J. Paterson Ross: Sympathectomy as an Experiment in Human Physiology. (Hunterian lecture.)

UNIVERSITY COLLEGE, Gower-street, W.C.

MONDAY, Jan. 30th.—5.30 P.M., Sir Charles Sherrington: Flexibility of Reflex Action.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Jan. 30th, to SATURDAY, Feb. 4th.—ST [illegible]
HOSPITAL FOR DISEASES OF THE SKIN [illegible] the place
square, W.C. Course in Dermat[illegible] is cured by like,
instruction in the Out-[illegible] orforce, and a curious illustra-
lectures at 5 P.M. [illegible]d by the Beirut correspondent
HOSPITAL, Gray's [illegible] would seem that an unusual spell
demonstrations [illegible] cold has been disastrous to cattle
ment, by D[illegible] and the Moslem religious leaders of Damascus
Feb. [illegible]
[illegible]ve attributed the untoward conditions to the wrath of Heaven in consequence of the introduction of the toy named "Yo-Yo" which gained universal popularity recently. The toy or contraption, whose vogue is now, we think, exhausted, was a sort of bobbin or spool of wood which is made to rise and fall by manipulating a string wound round the spindle of the bobbin. The Moslem priests maintained that "while people were praying for rain to come down from above the Yo-Yo goes down, and before reaching the ground up it springs again." Hence, of course, the drought, the rain, in mimicry, going up again before it has come down. In consequence of the protest by the priests the Minister of the Syrian Republic has prohibited the game, and the police have confiscated all "Yo-Yo's" seen in the streets. The sequel has been that during the Moslem week and on the sacred day of that week in central Iraq, where the drought had been most severe, rain fell heavily, and the accuracy of the religious divination has been proved to the Syrians.

Vacancies

For further information refer to the advertisement columns

Archway Hospital, Archway-road, Highgate, N.—Asst. M.O. £250.

Birmingham, Canwell Hall Babies' Hospital.—Res. M.O. At rate of £250.

Birmingham, Queen's Hospital.—H.S. to Ear, Nose and Throat Dept. At rate of £70.

Birmingham, Selly Oak Hospital.—Cas. O. At rate of £200.

ST. PETER'S HOSPITAL FOR STONE, Henrietta-street, W.C.

WEDNESDAY, Feb. 1st.—3 P.M., Mr. R. Ogier Ward: Elucidation of Urinary Symptoms: Frequency of Micturition.

LONDON JEWISH HOSPITAL, Stepney Green, E.

THURSDAY, Feb. 2nd.—4 P.M., Dr. L. Mandel: Lecture-demonstration.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.

WEDNESDAY, Feb. 1st.—4 P.M., Dr. C. E. Lakin: Demonstration of Medical Cases.

ROYAL INSTITUTE OF PUBLIC HEALTH, Queen-square, W.C.

WEDNESDAY, Feb. 1st.—4.30 P.M., Dr. C. W. Buckley: *Economics of Rheumatism.*

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY Feb. 2nd.—9 P.M., Mr. V. F. Hall: Modern Anæsthesia.

ST. MARY'S HOSPITALS, Manchester.

FRIDAY, Feb. 3rd.—4.15 P.M. (at the Whitworth-street West Hospital), Dr. Fletcher Shaw and Dr. Bride: Ante-natal Demonstrations.

GLASGOW POST-GRADUATE LECTURES.

TUESDAY, Jan. 31st.—3.30 P.M. (in the Faculty Hall, St. Vincent-street), Prof. J. Hendry: Maternal Mortality Investigations.

WEDNESDAY, Feb. 1st.—4.15 P.M. (at the Royal Hospital for Sick Children), Mr. M. White: Surgical Cases.

Appointments

DÓNE, JANET M., M.B. Lond., has been appointed Resident M.O. to Horton General Hospital, Banbury.

FISON, J., M.D. Camb., Ophthalmic Specialist Medical Referee, under the Workmen's Compensation Act, for the Pontefract, Tadcaster, York, Ripon, and Harrogate County Court Districts (Circuit No. 15).

MITCHELL, A. P., M.D., Ch.M., F.R.C.S. Edin., Medical Referee, under the Workmen's Compensation Act, for the Sheriffdom of the Lothians and Peebles.

London County Council.—Senior assistant medical officers (Grade II.): L. HOUGHTON, M.R.C.S., Colindale Hospital; SMITH, D. R. E., M.R.C.S., St. Luke's Hospital, Lowestoft; and MITMAN, M., M.D. Lond., North Eastern Hospital. Assistant medical officers (Grade I.): WESSON, A. S., M.D., M.R.C.P. Lond., Archway Hospital; DOBBIN, C. J. V., M.R.C.S., Bethnal Green Hospital; FISH, R. H., M.R.C.P. Lond., High Wood Hospital; HARGREAVES, FLORA, M.B. Lond., F.R.C.S. Eng., Mile End Hosp[illegible]
TANNER, N. C., M.B. Brist., F.R.C.S. [illegible]
Hospital; and EVANS, R., M.B. [illegible]Asst. M.O. £250.
H[illegible] *North-Western* [illegible] *Hospital.*—Cas. O. and H.S.
Also H.S. to Special Depts. Each £120.

Norwood Children's Hospital, S.E.—Asst. M.O. £250.

Paddington Green Children's Hospital, W.—Hon. Surgeon to Ear, Nose and Throat Dept.

Prison Medical Service.—Med. Officer. £446 14*s*.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Res. Anæsthetist. At rate of £100.

Queen Mary's Hospital for the East End, E.—Surg. and Dental Anæsthetist. 50 gns. and £25 respectively.

Rochester [illegible] *Hospital.*—H.P. At rate of £175.

Rotherha[illegible] S. £150.

Royal F[illegible] *Inn-road, W.C.*—Chief Clin. Asst. for [illegible]

Royal N[illegible]—Medical Officer.

Royal Surgical Aid Society, Salisbury-square, E.C.—Hon. Ophth. Surg. 50 guineas.

St. Bartholomew's Hospital, E.C.—Asst. Surgeon.

St. Benedict's Hospital, Church-lane, Tooting, S.W.—Asst. M.O. £250.

St. George-in-the-East Hospital, Raine-street, Wapping, E.—Asst. M.O. £250.

St. Luke's Hospital, Sydney-street, S.W.—Asst. M.O. £250.

St. Mary's Hospital for Women and Children, Plaistow, E.—Hon. Ophthalmic Surgeon.

St. Paul's Hospital for Diseases of the Genito-urinary Organs and Skin, Endell-street, Holborn, W.C.—H.S. At rate of £150.

St. Thomas's Hospital.—Res. Asst. Physician.

Salisbury General Infirmary.—Two H.S.'s and H.P. Each at rate of £150.

Southampton Children's Hospital and Dispensary for Women.—Res. M.O. At rate of £150.

Southend-on-Sea General Hospital.—Res. Obstet. House Officer.

Stoke-on-Trent, North Staffordshire Royal Infirmary.—Asst. H.P. £125.

Sudan Medical Service.—Two M.O.'s. Each £E720.

Swansea County Borough.—Asst. M.O. £500.

Walsall General Hospital.—H.S. At rate of £150.

West London Hospital, Hammersmith-road, W.—Asst. Phys. for Diseases of Children. Also Asst. Gynæcologist.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Caldicot (Mon.), Fleet (Hants), Romsey (Hants), and at Banff (Banff).

The Home Secretary gives notice of vacancies for Referees *at each of the following Sheriff Court Districts or groups of* Districts: Campbeltown; Dunoon; Kirkcudbright; Cupar; Glasgow, Lanark, Hamilton, and Airdrie; Dingwall, Tain, Cromarty; and Duns. Also for Ophthalmic Cases at Ayr, Kilmarnock; Glasgow, Lanark, Hamilton, and Airdrie; Paisley, Greenock, and Rothesay; and Stirling, Falkirk, Dumbarton, and Alloa. Applications should reach the Private Secretary, Scottish Office, Whitehall, London, not later than Feb. 11th.

37·2 per cent., Harris,[7] and 35·4 per cent. at Edinburgh, Wilson [9]).

Following the introduction of the picric acid treatment for burns by, I believe, Sir Cuthbert Wallace in 1899, the mortality at St. Thomas's Hospital during the succeeding four years, as seen from Table IIIA., diminished considerably for scalds, showing an average for the period of 7 per cent., that of burns remaining at 39·7 per cent.; while in a corresponding five-year period immediately preceding the introduction of tannic acid the mortality for burns had fallen, I think partly owing to the introduction of adequate preliminary cleansing of the damaged area, partly to improved social conditions and the change in the proportion of burns to scalds (Table III.B) to 15·5 per cent., while that for scalds remained approximately the same at 7·5 per cent. No exsanguination transfusion was carried out on these cases.

TABLE III.—*Mortality of Burns and Scalds in St. Thomas's Hospital* (A, 1900–03; B, 1924–28).

Treatment.—2 per cent. aqueous picric acid for two or three days, then paraffin dressings in most cases.

A

Year.	Burns.			Scalds.		
	No.	Deaths.	Per cent.	No.	Deaths.	Per cent.
1900	49	16	32·6	32	3	9·4
1901	55	29	52·7	42	1	2·3
1902	51	18	35·2	35	3	8·5
1903	39	14	35·8	33	3	9·0
Total 4 years..	194	77	39·7	142	10	7·0

B

Year.	Burns.			Scalds.		
	No.	Deaths.	Per cent.	No.	Deaths.	Per cent.
1924	9	1	11·0	29	0	0
1925	13	4	30·8	39	3	7·7
1926	11	1	9·1	40	3	7·5
1927	14	2	14·3	52	5	9·6
1928*	11	1	9·1	25	3	12·0
Total 5 years..	58	9	15·5	185	14	7·5

* In addition, treated with 2 per cent. tannic spray, 7 burns and scalds with 1 death—14·2 per cent.

These figures compare very favourably both with the figure quoted by Wilson [9] for the Edinburgh Royal Infirmary (22·4 per cent.) during the same period, and the Sick Children's Hospital, Toronto (29·6 per cent. in 213 cases), where exsanguination transfusion was used combined with local treatment.

What then was the reason of this improvement in mortality where picric acid 2 per cent. aqueous solution was used unless that the coagulation of the surface protein both lessened collapse and stemmed the escape of serum?

Considerations in Treatment

The treatment of burns and scalds therefore, following adequate cleansing of the damaged area, aims, in the main, at lessening the collapse by stopping the absorption of those bodies which cause this collapse and death in from 12 to 48 hours after the burn, and also in diminishing the loss of fluid from the burnt area which, as has been shown, is so serious and so often fatal in the first 6 to 12 hours.

A further aim is prevention of the toxæmia from absorption of septic material from the infected burnt area which may be manifested elsewhere, especially as septic broncho-pneumonia, and cause death in from 5 to 12 days.

The initial shock and suffocation cannot be affected by local treatment of the burnt area, and death from these causes can be ameliorated only by efficient first-aid treatment from those on the spot at the time of injury.

Tannic Acid Treatment

When I was in Detroit in 1926 I was privileged to see Dr. Davidson's treatment of burns by compresses of tannic acid solution, and I was very much struck with the fit condition of the patients and the absence of sepsis resulting from this treatment. I was, however, convinced that a treatment which necessitated the removal of the protecting scab with the dressings at frequent intervals, with considerable pain to the patient, was not ideal.

On taking over the charge in November, 1928, of the septic wards at St. Thomas's Hospital, to which all the burns and scalds are admitted, I adopted the spray method advocated by Wilson,[2] saving that I found a 2 per cent. solution of tannic acid was adequate to secure good results. I was immediately struck by the enormous improvement in the general condition of the patients and the entire absence of pain and sepsis in the areas so treated. It was a noteworthy fact that patients with very extensive burns and children with scalds were comfortable, bright, and alert the day following the injury, read, talked cheerfully, and ate well, while the pulse was not rapid, nor the temperature raised.

TABLE IV.—*Mortality of Burns and Scalds in St. Thomas's Hospital* (1929–32).

Treatment.—2 per cent. tannic acid, 1/2000 mercuric chloride; spray *or* compress.

Year.	Burns.			Scalds.		
	No.	Deaths.	Per cent.	No.	Deaths.	Per cent.
1929	12	0	0	27	0	0
1930	15	1	6·6	37	2	5·4
1931	21	1	4·7	53	1	1·8
1932	26	1	3·8	58	0	0
Total 4 years..	74	3	4·0	175	3	1·7

It was obvious, however, that there were many disadvantages to this method of treatment, to wit, (*a*) the necessity for leaving the area exposed to the air while at the same time keeping it and the patient warmed; (*b*) the disadvantage of the mechanical restraint necessary to keep the damaged area at rest and free from interference and irritation: (*c*) the need for constant attention and repeated hourly sprayings for from 10 to 24 hours (and usually, in my experience, nearer the latter period of time); (*d*) the obvious impossibility of being able to spray and expose the entire burnt or scalded surface in those cases where the body had been burnt both in front and at the back; (*e*) and—a minor detail—the necessity for hourly making of fresh solutions. This last was necessary, as I discovered that with solutions kept after this time the crust produced was soft in consistency, light in colour, and though it gave an equally satisfactory result as when constant fresh solutions were applied, yet the patient suffered some pain and inconvenience which could be avoided under the rigid period (1924–31) it was 132 burns to 360 scalds; showing that the total number of burns and scalds admitted to St. Thomas's has remained very constant, yet there is a considerable increase in the number of scalds to burns—a factor the importance of which must be realised when considering the mortality of these cases apart from the method of treatment adopted, and one which I venture to point out has so far apparently escaped notice. It is, however, of some importance, for I find that whereas some writers by "burns" mean burns only, others include scalds under this heading, a proceeding which vitiates the value of comparative tables.

Causes of Death from Burns

In considering the causes of death from burns, as they have been admirably summarised by Wilson,[2] we have the stage of initial shock (or, as I prefer to call it, "shock") which immediately follows the upset to the nervous system resulting from the exposure to flames or scalding fluid. He estimates the mortality in this period as only 2½ per cent. The experience at St. Thomas's Hospital places it even slightly lower in those cases which survive to be admitted to hospital, though Donald gives this figure as far higher and increasing from 30 per cent. (1899) to 58 per cent. (1928).

Secondly, the stage of acute toxæmia due to the absorption of toxic substances from the damaged tissue in the burnt or scalded area. Here the experience at St. Thomas's Hospital leads one to agree emphatically with Wilson's opinion that this occurs 6 to 24 hours subsequent to the injury, and not as stated by Fraser [3] on the fourth day or later. As has been shown by Davidson [4] and Fraser,[5] this toxæmia is the result of histamine freed into the blood from damaged tissues which possibly causes diminution of blood chloride, and is best combated, if and when it has occurred, by exsanguination transfusion as suggested by Ajello and Parascando,[6] and advocated and practised with such success by Fraser,[5] Harris,[7] and others. This method, which consists in removing a measured quantity of the toxic blood from the patient and replacing it by a somewhat larger volume of whole blood from a donor, is not necessary if by coagulation of the damaged tissues we can prevent absorption toxæmia. It is therefore unnecessary, as will be shown, in the treatment of burns the surface of which has been sufficiently coagulated with tannic acid.

There is, however, at an earlier period (6 to 12 hours) a very important factor which seems to have escaped the attention of Wilson, for he does not mention it. Attention is however devoted to this subject by Underhill,[8] who discovered that the loss of blood-serum from the burnt surface in the first hours after a burn is very excessive—a fact well known clinically and demonstrated both by the condition of the dressings on the burns and the extreme thirst and restlessness of the patient. Underhill showed that with rabbits this loss may reach 70 per cent. of the blood volume, that the maximum loss occurred with third degree burns of large extent, moreover that where one-sixth of the total surface is burnt death almost inevitably follows. In analogy, a man of 65 kg. body-weight who might be expected to have 5000 c.cm. of blood in his body would lose 3500 c.cm. of serum in the 24 hours following a third-degree burn, involving one-sixth of the total body surface, and the majority of this loss occurs in the first 12 hours. It will be seen therefore that this factor constitutes a very potent cause of that collapse which subsequently ensues and which is responsible for something like 80 per cent. of the deaths after burns. This collapse is due both to the toxic absorption and this extensive loss of fluid from the burnt area.

The excessive loss of serum may be combated by the administration of fluid intravenously, subcutaneously, and orally, but with an extensive burn it is next to impossible to get sufficient into the tissues to replace the loss, and it is essential therefore that some method of combating this loss, such as coagulation of the surface of the burnt area, shall be devised which will be sufficient, both mechanically and physically, to prevent the escape of fluid from the capillaries on the surface of the damaged tissues. It was, I think, here that the picric acid treatment constituted such an advance on the older bath and grease method, though it failed inasmuch as the coagulum did not penetrate the tissues to prevent the absorption of toxic substances from the deeper tissue damaged in the accident. Again, owing to the toxicity of the picric acid, manifested by skin rashes, irritation, and not infrequently by albuminuria, it was seldom possible to retain this dressing more than two or three days, after which paraffin had to be substituted and sepsis not infrequently supervened.

Thirdly, there is the stage of septic toxæmia which constituted so serious a problem in the few cases which in the old days survived the previous stage. This is not a serious problem if the injury is treated by picric acid, and is practically non-existent in the tannic acid treatment, where with proper and adequate preliminary cleansing of the damaged area sepsis is practically never seen.

Reasons of Failure of Older Methods of Treatment

The practice at St. Thomas's Hospital before 1899 was to treat all burns by daily baths, with the object of washing away septic material, and applying an antiseptic grease dressing between these periods in an endeavour to obtain a painless dressing and a vain hope of preventing the suppuration which invariably occurred. But no local treatment was present either to prevent the absorption of collapse producing histamine bodies, or to stop the escape of serum from the damaged tissues. As will be seen from Table II., the average mortality during these years for burns was 39·6 per cent., and for scalds was 18·8 per cent. (compared with the Sick Children's Hospital, Toronto,

TABLE II.—*Mortality of Burns and Scalds in St. Thomas's Hospital* (1894–98).

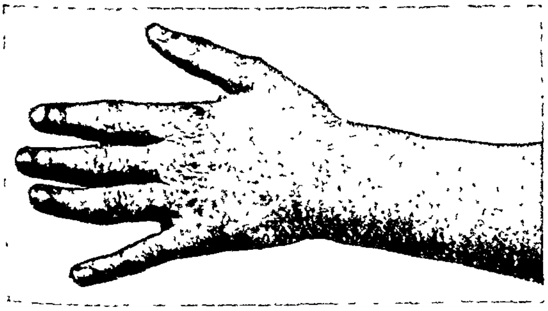
Treatment.—Baths and boric ointment.

Year.	Burns.			Scalds.		
	No.	Deaths.	Per cent.	No.	Deaths.	Per cent.
1894	67	19	28·0	46	10	21·0
1895	63	25	39·0	44	2	4·5
1896	48	26	54·0	34	11	32·0
1897	49	18	36·0	33	7	21·0
1898	48	21	43·75	45	8	18·0
Total 5 years..	275	109	39·6	202	38	18·8
1899	45	15	33·0	30	12	40·0
Treatment:	2 per cent. aq. picric.			Baths and ointment.		

lysis and 73 per cent. unaltered gallo-tannin, and that the percentage of gallic acid in solutions of earlier date is considerably less, I have been convinced that change to gallic acid does not occur to any appreciable extent. Moreover, this hydrolysis to gallic acid takes place extremely slowly in solutions free from moulds, which do not develop in those containing 1/2000 perchloride of mercury, and it has been shown that in a three-months-old 2 per cent. solution with 1/2000 perchloride of mercury no practical increase occurs in the percentage of gallic acid. Incidentally, on sterilising and using the five-year-old solution above referred to on a burn, as a compress, a good scab was obtained with a perfect result.

A further possible cause for failure of the stale solution was that owing to an increased density of colloid a solution of diminished strength only could get through the nozzle of the atomiser, but this was easily disproved. Then was it possible that oxidation was causing some change in the solution though none was demonstrable? A solution was charged with carbon dioxide to prevent this possible oxidation, and though this remained quite free from those traces of pyrogallol which cause the darkening of any tannic acid solution exposed to the air, the crust produced was not in any way different to that obtained from using the ordinary stale solution of tannic acid, it was softer and lighter in colour.

FIG. 3



Slight scald of hand. Showing complete epithelialisation on removal of compress at end of 10 days.

It was obvious, therefore, that no apparent change occurred in the solution, and I considered that probably longer contact of the solution with the area should result in a satisfactory coagulum, and, as already stated, observations proved this surmise to be correct. It struck me when I found that the burnt surface, covered by a sterile gauze dressing, of a patient lying on a sheet soaked in the overflow from the tannic acid sprayed on the damaged and exposed area, formed a perfectly good crust, that herein lay a possible easy method of treatment. By the sacrifice of a soiled sheet I evolved the method of treating these burns and scalds with a compress left undisturbed on the previously cleaned area until the scab separated, usually in from 14 to 21 days (Figs. 1 and 2).

In order to prevent the growth of the moulds in the tannic acid solution, and so diminish the hydrolysis to gallic acid and at the same time to keep an antiseptic in the area and possibly so minimise the chance of sepsis from outside sources, I looked round for some suitable antiseptic to add to the 2 per cent. tannic acid solution. Here I was helped by previous experience and decided to use the 1/2000 perchloride of mercury, which again proved quite efficient in inhibiting growth of moulds and so reducing hydrolysis to a minimum, while it also acted as an efficient antiseptic in the coagulum and so prevented outside infection. I again found that when added in a strength of more than 1/2000 the perchloride interfered with the coagulating action of the tannic acid and produced a soapy crust which was unsatisfactory and did not relieve the patient's pain.

TECHNIQUE OF THE COMPRESS METHOD

A compress of 2 per cent. tannic acid with 1/2000 perchloride of mercury makes a most efficient first-aid dressing for all burns and scalds, as I have proved in my own home. But in the home and other places where burns occur but rarely, tablets or powder, to be dissolved in warm water and applied by soaking clean linen in the resulting solution, will be found more advantageous than keeping a large quantity of stock 2 per cent. solution.

The formulæ for the tablets and powder are as follows :—

Powder: tannic acid, grs. 17½; perchloride of mercury, gr. ½; to be dissolved in 2 oz. of warm water, when a 2 per cent. solution will result.

Tablets: tannic acid, grs. 17½; perchloride of mercury, gr. ½; boric acid, gr. 1; to be dissolved in 2 oz. of warm water, when a 2 per cent. solution will result.

Whatever method of first-aid treatment may have been employed—and I hope as time goes on the method I am about to describe may become universally adopted as a first-aid dressing—it is essential that this first-aid dressing, even if of tannic acid, should be removed, which it can be most easily, and the area carefully cleaned before the final tannic acid dressing is applied. By this careful cleansing alone can subsequent sepsis be avoided; and here let me say that should sepsis supervene during a course of treatment, it is only necessary to remove the tannic acid dressing, re-clean the area thoroughly, and

TABLE V.—*Opium Dosage for Cleansing Burns and Scalds*

I.—*In Children*

Age.	Preparation.	Dose.
1/12	Tinct. camph. co.	♏ ii.–iii.
2/12	„ „ „	♏ iv.–vi.
3/12	Tinct. opii.	♏ ¼–⅓.
6/12	„ „	♏ ⅔–¾.
1 year	Tinct. opii (*a*) *or* Inj. morph.	♏ ii.–iii. gr. 1/75.
Over 1 year ..	Tinct. opii *or* Inj. morph.	♏ ii. for each year and ♏ ii. in 15 min. if necessary. gr. 1/75 for each year.

II.—*In Adults*

Age.	Preparation.	Dose.
12–15 years ..	Tinct. opii *and* Inj. morph.	♏ xxx. gr. ⅙.
15–20 „ ..	Tinct. opii *and* Inj. morph.	♏ xxx. gr. ¼.
Over 20 „ ..	Tinct. opii *and* Inj. morph. (*b*) *or* Inj. morph. (*c*).	♏ xxx. gr. ¼–⅓. gr. ⅓–½.

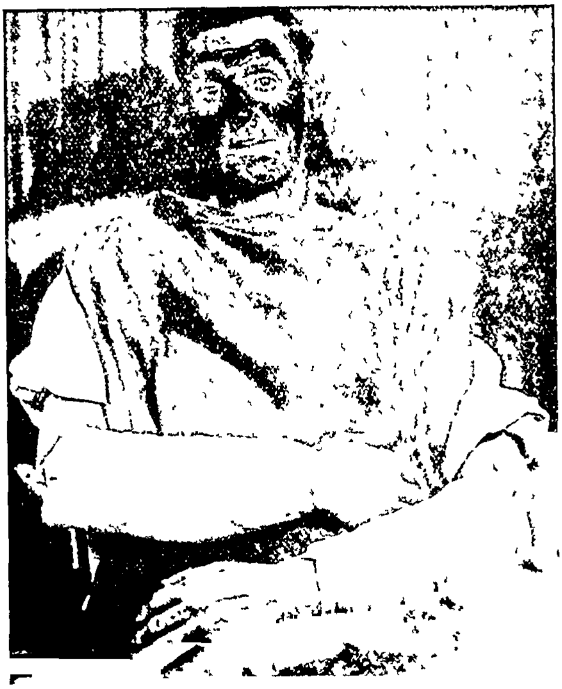
Remarks.—(*a*) Tinct. opii is more satisfactory than morphia. (*b*) For women. (*c*) For men according to stamina.

N.B.—Should slow or shallow breathing give rise to anxiety, atropine sulphate gr. 1/200–1/50 should be administered hypodermically.

black coagulum obtained with repeated applications of freshly made 2 per cent. tannic acid.

These facts made this method of treatment applicable only in the case of in-patients in large hospitals, and possibly the offspring of that diminishing class, the millionaire, and even in these cases only to those patients who were sufficiently thoughtful to be burnt on one side alone. I therefore set about to try to discover some other method which should be applicable universally to the treatment of burns and scalds in the out-patient departments, by general practitioners, and both at home and in works as a first-aid application. And here I was helped by the suggestion of a compress for first-aid in the Medical Research Council's report.[10] It struck me that if an antiseptic were added it would enable the solution to be made with clean tap water, and prevent possible infection from outside sources. I was further guided in the choice of an antiseptic by the knowledge that perchloride of mercury was a precipitant of proteins, and indeed, on inquiry, I found that Petit, and I believe also Lord Lister, had in the early part of the nineteenth century employed perchloride of mercury as a treatment for burns with the object of precipitating surface protein by an antiseptic and so preventing toxic absorption and local sepsis. Owing, however, to the toxic nature of the mercury solution all those cases had either died or suffered severely from mercurial poisoning, and this method of treatment had been abandoned. I found, however, that when added in a strength of more than 1/2000, the perchloride of mercury interfered with the coagulating action of the tannic acid and produced only a soft soapy crust, which was unsatisfactory and did not relieve the patient's pain or completely prevent collapse.

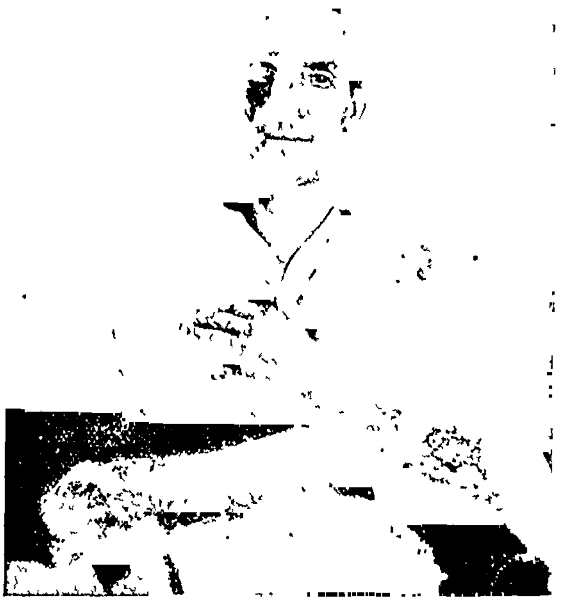
FIG. 1



Severe third and fourth degree burn. Ten hours after injury. Face sprayed; arms "compressed" (a clean bandage is applied over the stained compress and bandage).

I therefore commenced in the autumn of 1929 to use in the out-patient department compresses soaked in 2 per cent. tannic acid and 1/2000 perchloride of mercury for the treatment of all minor burns and scalds. These were made of lint or gauze but I have found the latter more satisfactory, and at first this was re-wetted on the outside hourly for six or eight times with freshly made solution. This frequent damping was inconvenient with out-patients, even though I had tablets made for the patients to take home with them. Further investigation has shown this re-damping to be unnecessary to the success of this method, which has been for over three years in almost universal use in both the in- and out-patient departments of St. Thomas's Hospital, and latterly it has been in use by several general practitioners and as a first-aid dressing in various works, and in my own home, where it has proved satisfactory.

FIG. 2



The same patient 14 days later. Coagulum and compress removed.

CHANGES OF TANNIC ACID AND ITS SOLUTIONS ON KEEPING

The next thing that occurred to me was why a fresh solution was necessary hourly? On analysis of the tannic acid used at St. Thomas's Hospital, it proved to be a natural gallo-tannin prepared from Aleppo galls, and to contain when fresh 88 per cent. gallo-tannin and 6 per cent. gallic acid, and some moisture. Thanks to the aid of Prof. R. H. A. Plimmer and Mr. J. Lowndes, of our chemistry department, I soon knew that even at the end of two years no change had taken place in the colloidal state of the tannic acid solution, and it was necessary therefore to seek some other explanation as to why a stale solution gave an unsatisfactory crust. Frankly I have not been able to find it. In this investigation I have had the help of Mr. C. W. Peck, the pharmacist at St. Thomas's Hospital, and the great assistance of Mr. W. A. Woodward, one of the dispensers. Mr. Woodward, working by the colorimetric method advocated by Ainsworth Mitchell,[11] has shown that even after five years a 2 per cent. solution of tannic acid contains no more than 8·45 per cent. of gallic acid as a result of hydro-

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I would add that during the period 1929 to the present time, when tannic acid compresses have been the routine out-patient treatment for all burns and scalds, no deaths have occurred among those slighter cases which average 800 a year, of which about one-third are in children under 10 years of age. As might be expected there is a seasonal incidence of approximately 3 : 2 in favour of the winter months. For the past three years, then, the compress method has been in use in the out-patient department at St. Thomas's Hospital with excellent results. I regret I cannot give details either of the number and type of cases treated nor of the exact degree of severity of the burns and scalds; but in only two cases has sepsis occurred of a sufficiently severe nature to call for the admission of the patients to the wards, and in both these cases cleansing and reapplication of the tannic acid dressing has led to an uneventful recovery.

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1925	7	2	28·4	26	3	11·5
1926	7	0	0	32	3	9·3
1927	5	1	20 0	30	5	16 6
1928	6	0	0	23	3	13·0
Total 5 years..	32	4	12·5	134	14	10·4
1929	3	0	0	23	0	0
1930	3	1	33·3	34	2	5·8
1931	14	1	7·1	38	1	2·6
1932	7	1	14·2	41	0	0
Total 4 years..	27	3	11·1	136	3	2·2

I venture to think that this simple method of compress may be of universal application both by the general practitioner, in the out-patient departments of hospitals, and as a first-aid treatment in works and in the home, presenting, as it does, in its simplicity great advantages over the more complicated method of reinforced compresses recently advocated by Hunt and Scott[12] and Wilson.[9]

In the foregoing remarks I have endeavoured to trace the progress of the treatment of burns and scalds during the past 40 years, and to show that although improved social conditions and an increase in the number of scalds have, done much to reduce this mortality, yet improved treatment has done more, especially the introduction, or should I say rediscovery, of the value of tannic acid in this relationship. I have described a simple method of using this tannic acid, and even if you do not consider it suitable for universal application, as I hope you may, you must admit that its success in reducing the mortality of severe burns and scalds to 4 per cent. and 1·7 per cent. respectively at least redounds to the credit of the local treatment, for social conditions remain the same as in the preceding five years when the mortality was considerably higher (15·5 per cent. and 7·5 per cent.).

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APLASIA of the bone-marrow is a condition in which the hæmopoietic function of the marrow has become depressed, so that there is a diminution in the output of those blood-cells which are derived from it—i.e., the erythrocytes, the granulocytes, and the platelets.

It is not so much a disease-entity as a state produced by many conditions, such as poisoning by benzol and its derivatives; excessive exposure to irradiation; exhaustion of the bone-marrow by certain types of anæmia, such as hæmolytic anæmia and those anæmias with a megalocytic blood picture; and certain diseases which may affect the bone-marrow such as tumours and leukæmia. These conditions so depress the function of the bone-marrow that it ceases, to a greater or lesser extent, from performing its task of producing blood-cells. It is said that sepsis can produce aplasia. This and the pathogenesis of aplastic anæmia have been discussed elsewhere.[1]

But when these conditions of known ætiology have been excluded, there remains one type of aplasia, consistent in its symptoms, blood picture, and clinical history, and of no known causation, which may be regarded as a disease entity, and to which the term reapply a new tannic acid dressing in order to get a good result.

The cleansing must start with the removal of all dead and charred tissues, the excision of all loose skin raised over blisters, and the removal of grease, especial attention being given to the edges of the damaged area. The whole area should then be gently but thoroughly cleansed with soap and water (applied with a sterile swab and *not* with a nail-brush) and finally carefully sponged over with ether, to remove all natural or applied grease, in order to get a thorough coagulation. It is obvious that this treatment cannot be carried out unless the patient is rendered insensible to the pain which such a cleansing of the damaged area must entail. We have found at St. Thomas's that it is safer and more satisfactory to procure this insensibility by the administration of large doses of opium rather than the use of general anæsthesia which tends, even with the greatest care in its administration, to be followed by pulmonary complications, usually of a mild nature, which are detrimental to the rapid recovery of the patient. Table V. indicates the dosage and drug employed at various ages, and has proved both safe and satisfactory.

APPLICATION OF COMPRESS

A compress consisting of either six layers of sterile gauze or three layers of lint should be thoroughly soaked in a stock solution of 2 per cent. tannic acid and 1/2000 perchloride of mercury, and applied closely and evenly over the entire burnt area without wringing the dressing out. This compress should then be firmly and evenly bandaged in position, the bandage being applied directly to the outer side of the compress. The whole of the outside of the bandage may then be soaked with a spray of 2 per cent. tannic acid and 1/2000 perchloride of mercury in order to ensure that the underlying dressing is thoroughly wet. Mackintosh or jaconet should be placed under the patient until the dressing has dried in order to save soiling of the sheets by the tannic acid solution, for though this all washes out excepting for a faint iron mould, the sheet subsequently rots in this area. It is also well to secure the burnt limb temporarily in order to prevent undue movement until the tannic coagulum has formed firmly. This dressing should be left in position and untouched for at least a fortnight in the case of small burns and scalds, and three weeks where large areas are involved. At the end of this time the bandage should be cut and the dressing lifted, when the scab usually will separate completely from the burnt area. If it does not do so the dressing can be re-bandaged and removed later when separation has occurred. The separation may be rendered quite painless and assisted by spraying with tannic acid solution between the coagulum and the skin during this process. May I here say that the escape of a little serous or sanio-serous fluid from the edges of the coagulum or the raising in blisters of its centre with serum is no more an indication for interference or removal of the dressings during the first week after their application than it is with the bare coagulum resulting from the "spray" method. Temperature and toxæmia as shown by a rapid pulse, dried and furred tongue, and pain, with possibly the escape of sero-pus in considerable quantities, are the only indications calling for removal of these dressings before the time stated, and these indications in our experience are extremely rare and usually result from a failure in the thoroughness of the preliminary cleansing. Should removal be necessary, and in my experience it is very seldom called for, the area should be re-cleaned carefully and another tannic acid dressing applied.

As indicated, the dressing must be closely and evenly applied to the burnt area, and there are certain areas, therefore, such as the perineum, the groin, axillæ, the neck, and also the face, where the absence of bandages is an advantage, and where the spraying method gives better results, but the compress method has been and can be used with good effect in these areas. It must be realised that in burns where destruction of the subcutaneous and muscular tissues has occurred subsequent scarring and contracture are inevitable, and it is therefore necessary to apply tannic acid dressings, either by compresses or spraying, with the part in such a position that subsequent contracture may be counteracted. Equally is it obvious that although full epithelialisation will have occurred in those areas where the first, second, or third degree burn has occurred, an ulcer must be expected, and will be met with, in deeper burns, and this, if extensive, should be treated by subsequent autogenous skin-grafting, or if small by the application of some lotion, of which, in my experience, the most satisfactory is the following: purified alum, grs. 20; zinc sulphate, grs. 10; glycerin, 7 fluid ounces; water, to one pint.

Here I would like to draw attention to the excellence of this 2 per cent. tannic acid compress as a dressing not only for electrical, radium, and chemical burns, but also as an application to the area from which Thiersch grafts have been cut for the purpose of skin grafting in mastoid and other operations.

SOLUTION

It will be seen from the above that a stock solution of 2 per cent. tannic acid and 1/2000 perchloride of mercury will fulfil adequately the needs of the compress method. In order to meet the desirability of applying this solution warm to the burnt area it is our custom to keep it in a concentrated form and dilute it with the requisite amount of warm water. Personally I do not advise keeping it at more than double strength, as I find that more concentrated solutions are inclined to decompose more quickly, and the results obtained are therefore not so painless or so satisfactory as from the weaker solution. In order to meet the requirements of shops, or works, and the home, where burns are not frequent, or on ships, where the storage of quantities of solution is likely to be a bother, I have, with the assistance of Mr. Peck, composed a tablet containing tannic acid grs. 17½, perchloride of mercury gr. ½, and boric acid (excipient) gr. 1, which tablet dissolved in 2 oz. of water gives a solution of the necessary strength though slightly muddy in appearance, due to the presence of the boric acid which, however, does not interfere in any way with its efficacy of coagulation. It can be used equally well for spraying where this method is preferred.

Results of Tannic Acid Treatment

As will be seen from Table I., under the old bath and grease treatment, the average mortality was 39·6 per cent. burns and 18·8 per cent. scalds. In the early days of the picric acid treatment the mortality was 39·7 per cent. burns and 7 per cent. scalds, and in the last five years of the picric acid treatment the mortality was 15·5 per cent. burns and 7·5 per cent. scalds, whereas the adoption of tannic acid in October, 1928, and its systematic use in subsequent years has reduced the mortality to 4 per cent. burns and 1·7 per cent. scalds (Table IV).

If we consider the mortality in the case of children under 10 years (Table VI.), and compare them with those in the late picric acid period, it will be seen that the results with burns are not good as with scalds—a point analogous to the transition from oil to picric acid (compare Table II. and III.A). The results, however, show a distinct amelioration, and lead one to hope that further reduction in mortality may take place, and it must moreover be realised that these figures are for the severe burns alone. The Edinburgh figures (combined) for the same period are 8·7 per cent. (1926-29), 5·8 per cent. (1930), and 4·8 per cent. (1931), against St. Thomas's (combined) 3·7 per cent. (1929–'32), and Sick Children's Hospital, Toronto, 16 per cent. in 230 cases (1925–28).

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It is not so much a disease-entity as a state produced by many conditions, such as poisoning by benzol and its derivatives; excessive exposure to irradiation; exhaustion of the bone-marrow by certain types of anæmia, such as hæmolytic anæmia and those anæmias with a megalocytic blood picture; and certain diseases which may affect the bone-marrow such as tumours and leukæmia. These conditions so depress the function of the bone-marrow that it ceases, to a greater or lesser extent, from performing its task of producing blood-cells. It is said that sepsis can produce aplasia. This and the pathogenesis of aplastic anæmia have been discussed elsewhere.[1]

But when these conditions of known ætiology have been excluded, there remains one type of aplasia, consistent in its symptoms, blood picture, and clinical history, and of no known causation, which may be regarded as a disease entity, and to which the term idiopathic aplastic anæmia is applied. It is this condition that is considered in this paper.

The symptoms and physical signs are dependent on the altered condition of the blood and they are, most commonly, pallor and shortness of breath, hæmorrhages into the skin or from the mucous membranes, and sepsis, generally of the fauces, which occurs late in the course of the disease.

This disease occurs particularly in young adults, but no age is exempt, and females are said to be more susceptible than males. It usually runs an acute course, with a fatal termination in a few weeks, but rare cases have been described in this country and in America in which the disease runs a more chronic course, and the patient is kept in reasonable health for a time by repeated blood transfusions. This type would be more accurately termed chronic hypoplastic anæmia, and the first of our cases described below belongs to it.

BLOOD EXAMINATION

The characteristic feature of the blood picture in aplastic anæmia is the great reduction of all the cells derived from the bone-marrow, together with absence of or very little evidence of erythrocytic regeneration. Dyke [2] says that the detection of a single embryonic cell in a blood film is sufficient to set aside aplastic anæmia as a diagnosis. This is not quite in accord with the experience of other observers, and certainly not with our own, but this statement emphasises the rarity of primitive red or white cells in the blood in this condition.

Although the erythrocytes may number a million or less, there is no anisocytosis and no poikilocytosis. The cells are well filled with hæmoglobin and the colour-index is generally round about or above unity.

Nucleated red cells are very rarely present, and the reticulocyte count is low, usually less than 1 per cent. Minot [3] has pointed out that transient increases even above the normal percentage may occur, and in Witts's [4] case the reticulocyte count rose on one occasion as high as 6 per cent. This is clear evidence that some normal or even hyperplastic marrow is still functioning.

The great reduction of the erythrocyte count is not due to any hæmolysis, for this is not found in aplastic anæmia, but to deficient production by the bone-marrow.

There is a marked leucopenia, but only affecting the polymorphonuclear and eosinophil cells; the lymphocytes are unaffected, and the lymphocytosis is apparent and not absolute. This reduction of granulocytes is sometimes so extreme that, late in the disease, it is impossible to detect even one polymorphonuclear cell in a blood film; if these cells are reduced below 1000 per c.mm. the resistance to infection is impaired and sepsis is likely to result.

The blood-platelets are reduced, but purpura does not result until their number is greatly diminished, usually well below 60,000 per c.mm. This marked thrombocytopenia is often seen late in the course of the disease. Whenever purpura is present, the bleeding time is prolonged and the capillary-resistance test is positive. Many authorities consider that the coagulation time is lengthened, but Minot [3] finds it normal or only slightly delayed. This author says that the fragility of the erythrocytes is abnormal, the cells beginning to break up in about the normal strength of salt solution, but that complete hæmolysis is found in a stronger solution than normal. Only in one of our cases was this test done, and in her the fragility proved to be within normal limits as tested against a control.

PATHOLOGY

The morbid anatomy of the disease is illustrated by Cases 2, 3, and 4 (vide infra). The most important negative finding is the absence of hæmosiderin in the tissues; in the occasional cases where this pigment has been reported as present, it must be attributed to hæmorrhages which have taken place, since there is no hæmolysis in idiopathic aplastic anæmia.

The positive finding of importance is the characteristic appearance of the bone-marrow, best described by Sheard.[5] The marrow cavities of the long bones are filled with yellowish-white fat, sometimes of the consistency of pus. Microscopically, all the bone-marrow cells are diminished or absent. As a rule, this fatty change is not complete, and there remain, even in the long bones, a few small scattered areas of active marrow; while it is almost customary to find that the marrow of the cancellous bones—e.g., the sternum and ribs—remains active. Owing to the defective blood-supply various internal organs will be affected with fatty degeneration.

DIFFERENTIAL DIAGNOSIS

From pernicious anæmia.—Aplastic anæmia is a disease entirely distinct in its ætiology, pathology, and symptoms from pernicious anæmia, and it is important that these two conditions should be differentiated, since the prognosis and treatment are so different. The chief points of distinction are:—

(1) The average age-incidence is higher in pernicious anæmia.

(2) Glossitis, subacute combined degeneration of the cord, and splenomegaly may be present in pernicious anæmia; these conditions do not occur in aplastic anæmia.

(3) Achlorhydria is practically always present in pernicious anæmia; this is not so in aplastic anæmia.

(4) Clinical and pathological evidence of hæmolysis is present in pernicious anæmia and absent in aplastic anæmia.

(5) The average size of the red cell is increased in pernicious anæmia and normal in aplastic anæmia.

(6) Evidence of attempted regeneration of the erythrocytes is always obtained in pernicious anæmia and is typically absent in aplastic anæmia.

(7) Aplastic anæmia does not respond when the missing hæmatinic factor of pernicious anæmia is supplied.

The distinction is not, however, always so simple as these categorical statements suggest, for it is possible to get an aplastic blood picture in pernicious anæmia when the disease is rapidly progressive; when sepsis is present; or when the disease is not under suitable treatment—i.e., when the dose of the hæmatinic factor is insufficient or the preparation used is inactive. The blood picture of these cases shows, in addition to a marked diminution in the number of the erythrocytes, granulocytes, and platelets, no sign of red cell regeneration.

The following case illustrates the difficulty when an aplastic blood picture is present in pernicious anæmia.

A man, aged 56, had suffered in February, 1931, from a severe attack of obstructive jaundice, which cleared up in a few weeks. About a month later it was noticed that he had become very pale. His blood count gave 780,000 red cells, 2400 white cells, 26 per cent. of hæmoglobin, and a colour-index of 1·6. Examination of a blood film showed no anisocytosis or polychromasia, and no nucleated red cells. Nevertheless he improved with a blood transfusion and regular doses of ventriculin, and in two months he was in good health and back at his work, taking a small dose of liver extract each day.

At autopsy an examination of the marrow in the two diseases is distinctive, though Witts [6] says that if a thorough examination of the marrow is made in any case of pernicious anæmia, areas of complete aplasia are always found. Minot [7] refers to cases in which the marrow is hyperplastic yet the blood examinations have shown evidence of aplasia. In other megaloblastic anæmias which may appear in the course of certain diseases with gastro-intestinal lesions, such as sprue, fatty and chylous diarrhœa, cœliac disease, pellagra, and infestation by certain parasites, the marrow can become exhausted and a blood picture of aplastic anæmia may result.[6]

From idiopathic purpura hæmorrhagica and agranulocytic angina.—Aplastic anæmia can usually be differentiated clinically from these two diseases. In purpura hæmorrhagica the hæmorrhages and purpura occur early, before the anæmia is evident. The anæmia is secondary to the blood loss, and signs of red cell regeneration are usually obvious in an examination of a blood film. (This is of great practical importance if the question of splenectomy arises, as one of the contra-indications is a degree of anæmia greater than would be accounted for by the hæmorrhage.) Thrombocytopenia is present in both conditions.

In agranulocytic angina signs of infection, generally in the fauces, accompanied by a profound granulopenia, occur at the onset. Characteristically there is no anæmia, and the platelets are normal in number. The diagnosis is not always easy, however; it is customary in aplastic anæmia for the hæmopoietic function of the marrow to be affected in this order: first the red cells, then the granulocytes, and lastly the platelets; but the order may be reversed, so that if the platelets fail early purpura hæmorrhagica will be simulated; but if the leucocytes are affected early, the clinical picture may resemble that of agranulocytic angina. In the second and third of our cases (vide infra) these particular difficulties in diagnosis were encountered.

Moreover, there are cases which are definitely intermediate between these three conditions, and in these it may be impossible to make a clear-cut diagnosis. Tidy[8] has drawn attention to cases of purpura hæmorrhagica in which there is evidence of some degree of aplasia of the bone-marrow with an almost complete absence of neutrophils. Minot[3] says:—

> "There are many cases in the literature which are intermediate between idiopathic aplastic anæmia with symptomatic purpura hæmorrhagica, and idiopathic purpura hæmorrhagica itself. From such cases it is suggested that these two conditions may perhaps be not distantly related, for one can find cases of these idiopathic conditions, where the blood picture can be interpreted as showing all degrees of involvement of the three chief elements of the bone-marrow."

We have suggested elsewhere[1] that these three conditions should not be regarded so much as clear-cut entities, but rather as differing stages of one disease whose cause is a primary deficiency of the bone-marrow.

From aleukæmic leukæmia.—This is a variety of leukæmia which may run part or the whole of its course without any increase in the number of leucocytes circulating in the blood stream. Aplastic anæmia is thus simulated, since the blood picture may show an anæmia, a thrombocytopenia, and a leucopenia with a relative or an absolute lymphocytosis. Clinically, fever, sepsis, and hæmorrhages may be present without obvious enlargement of the spleen and lymphatic glands. A critical survey of the blood picture should show, at some phase of the illness, a lymphocytosis, perhaps up to 90 per cent.; signs of red cell regeneration; and, even more important, lymphoblastic cells. Nevertheless, it is sometimes impossible to make a diagnosis until autopsy when, instead of the acellular marrow of aplastic anæmia, an enormous lymphocytic hyperplasia is found.

From hæmolytic anæmia.—This is a rare disease which is not likely to be mistaken for aplastic anæmia. The evidence of increased destruction of red cells in the circulating blood and an attempt at an increased formation of these cells by the bone-marrow is usually obtained without difficulty. The two clinical signs, icterus and splenomegaly, are sufficient to negative a diagnosis of aplastic anæmia, even though an aplastic blood picture develops, as it sometimes does, as a terminal event.

From severe anæmia which does not conform to any particular group.—This type of anæmia is seen more particularly in infancy. Witts[9] says that there are plastic and aplastic groups with intermediate forms of a hypoplastic type. Death may result from the complete failure of the marrow or, more often than in adults, there is a gradual resumption of function. A case reported by Hutchison[10] seems to belong to this group.

PROGNOSIS

In idiopathic aplastic anæmia the outlook depends on the degree of involvement of the bone-marrow; when much of the bone-marrow is affected, as is usually the case, the prognosis is almost hopeless, but in the rare cases of chronic hypoplastic anæmia some good may result from treatment. We have found only six reported cases of aplastic anæmia which have benefited materially by treatment; of these, two have since relapsed and died:

Stewart Harrison[11] and Parkes Weber[12] have each reported a case of chronic hypoplastic anæmia. In the former case the diagnosis was made as far back as 1925 and the patient has been treated with blood transfusions, repeated every few weeks; at present he is able to do his work and maintain moderate health. Hurst, in a personal communication five months ago, wrote that this man remained well and had just received his 144th blood transfusion. Weber's case dated from January, 1931; at the date of reporting he has had 16 blood transfusions and remained fairly well. This case proved later, at autopsy, to be one of aleukæmic myelosis (*Quart. Jour. Med.*, 1932, xxv., 409).

Herman's[13] patient was a child whose blood suggested aplastic anæmia and who improved after one blood transfusion. She died, however, of anæmia four years later, and no autopsy was obtained.

Gibson's very interesting case[14 15] was a girl, aged 11, who suffered from aplastic anæmia of an advanced type but was kept in fair health for over six years by daily injections of adrenaline. Her condition had not been improved by blood transfusion. She died of hæmorrhagic chicken-pox.

Parkinson[16] and Hayes Smith[17] have each reported a case. In both patients purpuric manifestations appeared at the onset of the illness, to be followed by anæmia. A blood film of Parkinson's patient showed some signs of erythrocytic regeneration. For these reasons it is possible that they were examples of purpura hæmorrhagica, with some temporary aplasia of the bone-marrow.

Alpham and Nelson[19] have reported a man suffering from severe aplastic anæmia, who showed no improvement after blood transfusions and treatment with calf's liver. With massive doses (1000 g. per day) of fœtal calf's liver he recovered, and kept well on a much smaller dose.

These few recoveries and remissions do little to lighten an almost hopeless prognosis.

Lately, at Prof. Tanhauser's clinic at Freiburg, a young woman was seen who developed in the later weeks of pregnancy a severe anæmia with an aplastic-like blood picture. Intensive liver therapy and repeated blood transfusions improved her condition but little. Later, after many septic teeth had been removed and without further treatment, a rapid improvement set in. In this case a diagnosis of hæmolytic anæmia was definitely ruled out, and Tanhauser's opinion was that she was a type of aplastic anæmia. Whether the removal of septic teeth contributed to the improvement it is difficult to say. Witts,[18] in his recent Goulstonian lectures, quoted Larrabee's remark that "a man's index of scepticism must indeed be low if he can believe that these terrible, acute anæmias are the result of chronic foci of infection in teeth or tonsils, and can bring himself to hope for relief from their eradication." However this may be, such cases as that quoted from Freiburg do occasionally occur. They are a reminder that, although enormous advance has been made in the last ten years in the diagnosis and classification of anæmias, clinical difficulties have not yet disappeared. It is still wise to be guarded in prognosis until the diagnosis is securely established.

TREATMENT

The success of treatment in idiopathic aplastic anæmia will depend on the degree of deficiency of the circulating blood elements, which in turn will depend on the amount of bone-marrow which remains plastic, and which is capable of stimulation. The bone-marrow stimulants which are at present known include blood transfusions, small doses of X rays applied to the long bones, foreign proteins (such as milk), and certain endocrine extracts—e.g., adrenaline. Iron, arsenic, liver therapy, and removal of septic foci are considered to be unavailing.

DESCRIPTION OF CASES

The following four cases of aplastic anæmia have been under the care of one of us in the Derbyshire Royal Infirmary.

THE FIRST CASE

A woman, aged 32, was admitted to hospital for the first time in November, 1931, with a history that she had always been healthy until about two months before, when she had noticed that she was losing energy and was becoming weak and short of breath. She had had three children; their births had been attended with no difficulty, nor had there been any great loss of blood. The periods had always been quite regular and the loss not excessive.

She was a well-nourished though very anæmic woman, but in spite of this she said that she felt fairly well. The skin and conjunctiva were pale, but there was no lemon colour of the skin and no icteric tinge of the conjunctiva. There were several infected teeth, and the tonsils were enlarged and showed some signs of chronic inflammation, though the tonsillar glands were not affected. No further sign of sepsis was found. There was no increase of temperature. No abnormality was found in the tongue, lungs, or abdominal, urinary, and endocrine organs, nor in the nervous system (with the exception of two small hæmorrhages in the left retina). Neither the spleen nor any of the lymphatic glands were felt to be enlarged. There were a few petechiæ scattered over the trunk and thighs. There was no evidence of any blood destruction. There was some dilatation of the heart, as shown by the position of the apex beat, which was 3¾ in. from the midsternal line, with a softening of the first sound.

The result of the blood examinations on various dates are shown in Table I. In addition, the red cells were found always to be of normal shape and size, and no abnormal cells or reticulocytes were seen. The bleeding time was 5½ minutes, and the coagulation time 2½ minutes (Brodie Russell). The fragility of the red cells appeared to be normal.

	Patient.		Control.
Hæmolysis started ..	0·45 % saline	....	0·45 % saline
" completed..	0·35 % "	....	0·35 % "

TABLE I.—*Blood Examination* (*Case 1*)

Date.	Remarks.	Hb. per cent.	Red cells per c.mm.	Colour-index.	White cells per c.mm.	Differential count per cent.		Size of red cells.	Platelets per c.mm.	Reticulocytes per cent.
						Pms.	Lms.			
26/11/31 ..	—	40	1,310,000	1·5	3,200	36	63	7·17	30,000	0
27/11/31 ..	Liver, ventriculin, iron started.	—	—	—	—	—	—	—	—	—
10/12/31 ..	—	30	1,070,000	1·4	4,300	—	—	—	—	—
14/12/31 ..	—	30	1,080,000	1·4	—	—	—	—	—	—
30/12/31 ..	—	20	790,000	1·4	3,100	—	—	—	—	1
30/12/31 ..	Injections of adrenaline started.	—	—	—	—	—	—	—	—	—
5/1/32 ..	—	30	940,000	1·5	4,800	28	71	7·45	94,000	1
6/1/32 ..	B.T., 1 pint.	—	—	—	—	—	—	—	—	—
8/1/32 ..	—	40	1,320,000	1·5	1,600	24	74	6·74	—	—
14/1/32 ..	—	35	1,590,000	1·1	3,200	—	—	—	—	—
20/1/32 ..	—	25	1,300,000	1·1	1,600	24	72	7·64	73,000	—
28/1/32 ..	—	30	1,090,000	1·5	2,400	16	81	7·17	—	—
1/2/32 ..	B.T., 1 pint. Adrenaline stopped.	—	—	—	—	—	—	—	—	—
9/2/32 ..	—	40	1,660,000	1·5	4,000	31	64	7·20	—	—
21/3/32 ..	—	10	790,000	—	2,400	—	—	—	—	—
22/3/32 ..	B.T., 1 pint. Adrenaline injec. restarted.	—	—	—	—	—	—	—	—	—
24/3/32 ..	B.T., 1 pint.	—	—	—	—	—	—	—	—	—
26/3/32 ..	"	—	—	—	—	—	—	—	—	—
31/3/32 ..	—	60	2,240,000	—	4,000	38	58	—	—	—
4/5/32 ..	—	20	820,000	—	2,400	—	—	—	20,000	2
5/5/32 ..	B.T., 1 pint.	—	—	—	—	—	—	—	—	—
8/5/32 ..	—	40	1,960,000	1·0	4,000	—	—	—	—	1
1/6/32 ..	B.T., 1 pint.	—	—	—	—	—	—	—	—	—
7/6/32 ..	—	20	1,800,000	1·1	3,200	23	71	—	—	1
23/6/32 ..	—	15	600,000	1·2	2,800	—	—	—	7,000	—
24/6/32 ..	B.T., 1 pint.	—	—	—	—	—	—	—	—	—
25/6/32 ..	—	35	1,600,000	1·1	3,000	—	—	—	—	—

Pms.= Polymorphonuclears; Lms.= Lymphocytes. B.T.= Blood transfusion.

Van den Bergh's reaction was completely negative, both directly and indirectly. A fractional test-meal showed free acid in normal amounts. A series of radiograms taken at intervals after a barium meal showed no abnormal shadows in the stomach or intestines. The stools appeared normal and no ova were seen in them. One of the infected teeth was removed, but no streptococci were found on culture from it.

During the first month in hospital she was treated with iron in large doses, ventriculin, and a liver preparation both by the mouth and intramuscularly (5 c.cm. of Hepatex P.A.F. daily). As was to be expected, there was no improvement either in her general condition or in her blood, as shown by absence of increase in the hæmoglobin, erythrocytes, or reticulocytes. On Dec. 30th, after we had read an account of Gibson's successful treatment of a girl suffering from this disease, an injection of 3 minims of adrenaline 1/1000 was given, and this was continued daily for nearly a month. In six days there was an improvement in her general condition, and to some extent in her blood.

On Jan. 6th, 1932, she was transfused with a pint of citrated blood, with great improvement. This was repeated on Feb. 1st and the improvement was maintained until about the middle of the month, when she began to relapse. So, in an effort to stimulate the marrow as much as possible, three large transfusions were given at intervals of two days, and the adrenaline injections resumed daily. She was able to go home and even to do part of her daily work, but by the beginning of May more transfusions became necessary. She improved again, and arrangements were made for her to have one or two blood transfusions every month. Since then, however, the improvement has not been maintained for as long as formerly, and a transfusion is necessary about every two to three weeks. The benefit from these transfusions only lasts about two weeks, after which she quickly becomes anæmic, with extensive purpuric hæmorrhages. This patient died in July, 1932: unfortunately, no autopsy, was obtainable, so that the diagnosis in this case cannot be regarded as definitely established.

THE SECOND CASE

A boy, aged 13, was admitted into hospital on Nov. 26th, 1931, suffering from extreme anæmia. He had always been well until the last five weeks, when he had become pale, with nose-bleeding for one day just before admission. He was extremely ill, and his pallor was intense. There was no icteric staining of the conjunctivæ or skin. There were a number of petechial hæmorrhages scattered over the trunk and limbs, with some bruising of the soft tissues. A systolic murmur was heard all over the præcordium. The liver and spleen were not felt. There were no retinal hæmorrhages. The temperature was 97° F., but rose, and varied between 100° F. and 103° F. The pulse-rate kept above 140 per minute. There was no sign of sepsis. A blood examination gave the following results: 400,000 red cells, 10 per cent. hæmoglobin, a colour-index of 1·2, and 2000 white cells. The average size of the red cell was 7·48 µ (by Eve's halometer). A differential count showed polymorphonuclear cells 41 per cent. and lymphocytes 59 per cent. The erythrocytes were of normal shape but irregular in size, and a few normoblasts and megaloblasts were seen. The blood-platelets numbered 10,000 per c.mm. The bleeding time was 13 minutes, and the coagulation time 24 minutes (Brodie-Russell). With a van den Bergh's test there was a faint positive indirect reaction. The tourniquet test was definitely positive.

Soon after admission the boy was given a transfusion of 350 c.cm. of citrated blood. An injection of 3 minims of 1/1000 solution of adrenaline was ordered every four hours, and hepatex P.A.F. 5 c.cm. was injected intramuscularly once a day. On the next day the boy was decidedly better, but he collapsed the day after and died.

At the *post-mortem examination* the left femur was split open longitudinally, so as to expose the marrow of the diaphysis and epiphysis. The marrow was of a yellow-white colour, about the consistency of thick pus, with a few small scattered pink areas. That of the sternum and several of the ribs was normal in appearance.

On *microscopical examination* of the marrow from the femur no cells were seen, only fat. From that of the rib, however, red cells, both nucleated and non-nucleated, were seen, with a few granulocytes and myelocytes: no organisms were found in the marrow. There were a number of petechial hæmorrhages on the visceral layer of the pericardium. The heart was dilated. There was evidence of some bronchopneumonia (terminal) of the right lung. The liver and spleen (3 oz.) were not enlarged, and looked normal. Some of the mesenteric glands were caseous. There was a persistent thymus, but the other endocrine glands were normal macroscopically.

THE THIRD CASE

The third patient was a man aged 40, a sorter, who had always been healthy except for malaria contracted during the war, and piles which bled from time to time. About the middle of April, 1931, he began to complain of giddiness and distaste for food, with abdominal discomfort. Some degree of jaundice and pyrexia was noticed. After about ten days' treatment he improved and went back to work, only to return to his bed a few days later as the weakness had increased. On admission to hospital on May 16th he looked very ill and pale, and was in a typhoid state. The tonsils were covered with an extensive slough which had spread on to the soft palate. There was no glossitis, nor was there any sign of hæmolysis of the blood or of jaundice. Nothing abnormal was found in the chest, in the abdomen, or in the nervous system. The urine contained a trace of albumin. The temperature ranged between 99° F. and 103° F. There were no hæmorrhages into the skin or retinæ, or from the mucous membranes. A blood count on the day of admission showed 25 per cent. of hæmoglobin; 1,840,000 red cells per c.mm., and a colour-index of 0·9. The size of the blood corpuscles was 7·46 µ. There were 400 white cells per c.mm., but no granulocytes were seen; the lymphocytes numbered 88 per cent., and the large monocytes 12 per cent. No signs of attempt at red cell regeneration were to be found.

He died a short time after admission to hospital. On *autopsy* the marrow from the femora was pale and fatty; on microscopical examination no normoblasts, granulocytes, or myelocytes were to be seen, the marrow being composed entirely of fat. The marrow from the sternum and ribs, however, was normal.

THE FOURTH CASE

The patient, a man aged 44, was a clerk employed in a factory where benzol compounds were used; he was seen on Jan. 10th, 1928. His work, he said, confined him to the office only, and he had never come in contact with the chemicals. He had been quite well until about six weeks before, when he noticed that he was becoming weak and breathless. He had been told that he was becoming pale.

On examination he looked a well-nourished man, but showed marked pallor. There were no enlarged glands, and the spleen and liver appeared normal. Nothing wrong was detected in his chest or abdomen except some dilatation of his heart. There was no sign of sepsis. He had some oozing of blood from his gums, but there was no clinical sign of blood destruction.

TABLE II

Date.	Hb. per cent.	Red cells per c.mm.	White cells per c.mm.	Granulocytes per cent.	Lymphocytes per cent.
Jan. 10th	35	1,500,000	4,400	11	89
„ 11th	30	1,090,560	1,600	41	58
„ 12th	20	860,000	400	8	92

A series of blood examinations is shown in Table II. There was no sign of any attempt at erythrocytic regeneration. On *autopsy* the marrow of both femora was examined, and practically all the hæmopoietic tissue was found to be replaced by fat. Microscopically no cells were seen except a few mononuclear ones.

COMMENTARY

The first of these cases is the most interesting, and undoubtedly belongs to the group named chronic hypoplastic anæmia, of which very few examples have been reported. The possible alternative diagnoses are pernicious anæmia with an aplastic blood picture, and lymphatic leukæmia in an aleukæmic phase. The diagnosis of pernicious anæmia is easily dismissed by the absence of the necessary clinical and pathological criteria, and by the steady clinical and hæmatological deterioration under intensive liver therapy.

The diagnosis of aleukæmic leukæmia deserves more serious consideration, for in a few of the differential white cell counts there is a slight but absolute lymphocytosis; in one instance only, however, did these cells number over 3000 per c.mm., and that was a few days after injections of adrenaline had been started (adrenaline produces a transient lymphocytosis). Against the diagnosis of leukæmia is the absence of embryonic types of lymphocyte and of any sign of red cell regeneration; and the fact that, although the case has been under observation for some months, no enlarged lymphatic glands have been detected. Although this diagnosis cannot be dogmatically dismissed, yet the patient's reaction to blood transfusions and adrenaline injections suggest that the diagnosis of chronic hypoplastic anæmia is likely to be the correct one. An interesting observation in this case was that there were no purpuric manifestations until the platelet count had fallen to 30,000 per c.mm.

In the second case the blood loss was not sufficient to cause the grossly anæmic blood picture, and the fact that the child had been ill and noticeably anæmic for many days before hæmorrhages or purpura were observed establishes the differential diagnosis from purpura hæmorrhagica. There were a few signs of attempted blood regeneration, but it should be remembered that in children the bone-marrow is more labile than in adults; moreover, some signs of red cell regeneration do not rule out aplastic anæmia. Cabot[2] has reported a man suffering from aplastic anæmia, whose blood film showed marked evidence of regeneration, but on autopsy typical aplasia of the marrow was seen. Acute leukæmia was a possible diagnosis during life, but this was definitely excluded by the post-mortem examination. There was no clinical sign of hæmolysis, and no hæmosiderosis was seen at autopsy, yet the van den Bergh's test showed a slight positive indirect reaction (probably this is without diagnostic value), so that it is possible, but unlikely, that this was an example of the acute hæmolytic anæmia in children which terminates in aplasia, and which has been described by Kleinschmidt (quoted by Minot[3]).

In Case 3 the gross leucopenia with complete absence of granulocytes, and the predominant picture of infection and fever, suggest a diagnosis of agranulocytic angina; but the severe anæmia and the aplasia of the bone-marrow at autopsy place it in an intermediate group between aplastic anæmia and agranulocytic angina. A platelet count might have confirmed this, but unfortunately it was not done; it is significant, however, that this was the only case in our series to be without purpura or hæmorrhages, and it was also the only case to show evidence of sepsis; but in others there was not such an extreme granulopenia, except terminally in Case 4.

The morbid anatomy of the bone-marrow in the cases that came to autopsy conformed to the classical descriptions.[5] In the two adults the whole of the femoral marrow showed the typical yellow appearance of complete aplasia, but in the child there were a few isolated pink areas with a small cell content. The marrow from the sternum in all three cases appeared normal both to the naked eye and microscopically. Dyke[21] has reported various kinds of micro-organisms in the bone-marrow in cases of aplastic anæmia, but careful search failed to reveal them in our cases.

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DONATIONS AND BEQUESTS.—The late Mr. Charles Wilson, of Belsize Park-gardens, London, left £500 to the Paddington Green Children's Hospital, and the residue of the property after other bequests between St. Thomas's Hospital, London Hospital, Charing Cross Hospital, the Hospital for Sick Children, Great Ormond-street, the Royal Free Hospital, the Cancer Hospital, Fulham-road, the London Fever Hospital, the Temperance Hospital, Hampstead-road, and the Hampstead General Hospital. The value of the estate is over £200,000.—Mrs. Martha Jones, of Edgbaston, left by will £500 to the General Hospital, Birmingham; £500 to Queen's Hospital, Birmingham; £500 to the Children's Hospital, Birmingham (King Edward VII. Memorial); £500 to the Birmingham and Midland Eye Hospital; £100 to the Midland Hospital for Homœopathic and General Treatment, Birmingham; £100 to the Birmingham and Midland Hospital for Women; £100 to the Birmingham and Midland Skin and Urinary Hospital; and £100 to Dr. Barnardo's Homes.—By the will of the late Mr. William Lyle, of Welwyn, Herts, the Hertford Cottage Hospital will receive £5000, the Hertford and District Nursing Association £1000, and the Welwyn Cottage Hospital £500.

A NEW FORM OF BED TENT FOR ADMINISTERING OXYGEN AND CARBON DIOXIDE

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With an Account of a
CLINICAL OXYGEN-MEASURING PIPETTE, *by*

E. P. POULTON *and* J. W. SHACKLE, M.R.C.S. ENG.

MANY methods have been employed for administering oxygen, but none of them is altogether satisfactory.

The *nasal catheter* has the advantage of simplicity, and it does not unduly inconvenience the patient; it was used first by the late Prof. Adrian Stokes of Guy's Hospital during the war, and it is the method most widely employed to-day. The proportion of oxygen in the alveolar air is raised to 24 per cent. with the oxygen flowing at 2 litres a minute; this means a brisk turbulent flow in the bottle through which the gas is usually bubbled; 24 per cent. is less than twice the normal value, so that the method cannot be regarded as really effective.

Higher values for the alveolar oxygen may be obtained by using a *face mask* as in Haldane's apparatus, or the various modifications described by H. W. Davies and A. R. Gilchrist,[1] and by R. Hilton[2]; but breathless patients are apt to resent all these devices, and the face mask is usually refused altogether. Hence it is not surprising that other more tolerable methods of giving oxygen have been elaborated, such as the oxygen chamber and the bed tent provide.

The discredited *glass funnel* that is still often supplied by chemists when oxygen is ordered was found by Hilton to cause no increase whatever in the alveolar oxygen at any rate of flow when held 10 cm. (4 in.) in front of the mouth; but when held so as to touch the nose and chin it has, with an oxygen flow of 2 litres a minute, a rather smaller effect than the nasal catheter.

Whenever oxygen therapy is discussed the question of *subcutaneous oxygen* is usually raised. If the results are beneficial they may be due to counter-irritation or acupuncture; but they certainly cannot be due to the oxygen acting as a respiratory gas, for Davies and Rabinovich[3] produced anoxæmia in dogs from pulmonary embolism; the oxygen saturation of the arterial blood was made normal by giving oxygen through the lungs; but there was no effect with subcutaneous and intraperitoneal oxygen.

HISTORY OF OXYGEN CHAMBERS AND TENTS

The first oxygen chamber was used at Cambridge during and after the war, and results with patients were published by Barcroft, Hunt, and Dufton.[4] There are oxygen chambers at several clinics in America, and A. L. Barach has devised a portable chamber. The experiences with the oxygen chamber which was in use for some years at Guy's Hospital were briefly described by Campbell and myself.[5] It was a large chamber with three beds, and it required 600 cubic feet of oxygen to begin with, and later from 300 to 600 cubic feet every 12 hours, as well as alkali to absorb the CO_2.

It is clear that the stationary oxygen chamber will never be of general clinical application, and the oxygen bed tent has most of its virtues and none of its failings. The object of the tent is to enable the patient to stay any length of time in an atmosphere enriched to any desired extent with oxygen, and containing CO_2 as well if required; the heat generated by the patient must be removed, and also the moisture from his breath amounting to as much as 10 oz. in the 24 hours.

The first bed tent was devised by Sir Leonard Hill.[6] Its disadvantage was that there was no adequate means of keeping the patient cool: but it was provided with a motor fan in an outer circuit to draw the air from the tent and pass it through a tin of soda lime and back again to the tent. The next advance was made by Barach,[7] who added a box to the circuit large enough to hold over 100 lb. of ice, and this has to be replenished every 12 hours: the shape of tent and "sleeve" described by him are now generally adopted. The next great advance was made by Cecil and Plummer [8] who introduced the injector, which replaced the motor fan in the circuit. In the injector the oxygen comes out under pressure through a minute orifice into the circuit, and the energy liberated is used to draw air round the circuit, so that the ventilation is effected by the potential energy of the oxygen stored in the cylinder: thus the working of the tent is independent of an electrical supply.

THE AUTHOR'S TENT *

In my experience the greatest difficulty in treating a patient by means of an oxygen tent is to keep him dry and cool. In the plan adopted by Barach and by Cecil and Plummer a high rate of ventilation is required for this purpose, though a much lower rate is sufficient to remove the CO_2. In the Cecil-Plummer apparatus a ventilation of 175 litres of air is used, and this requires an oxygen feed of 5 litres a minute, which produces an atmosphere containing about 50 per cent. of oxygen, and yet if the tent is reasonably air-tight I have found that from 1 to 2 litres of oxygen a minute is enough to keep the oxygen up to this amount. By keeping the mechanism for cooling and drying separate from the CO_2 absorption circuit a great saving of oxygen is effected.

FIG. 1

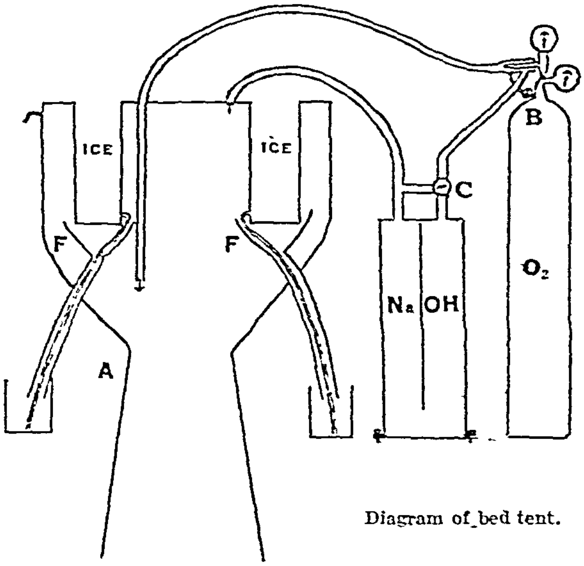
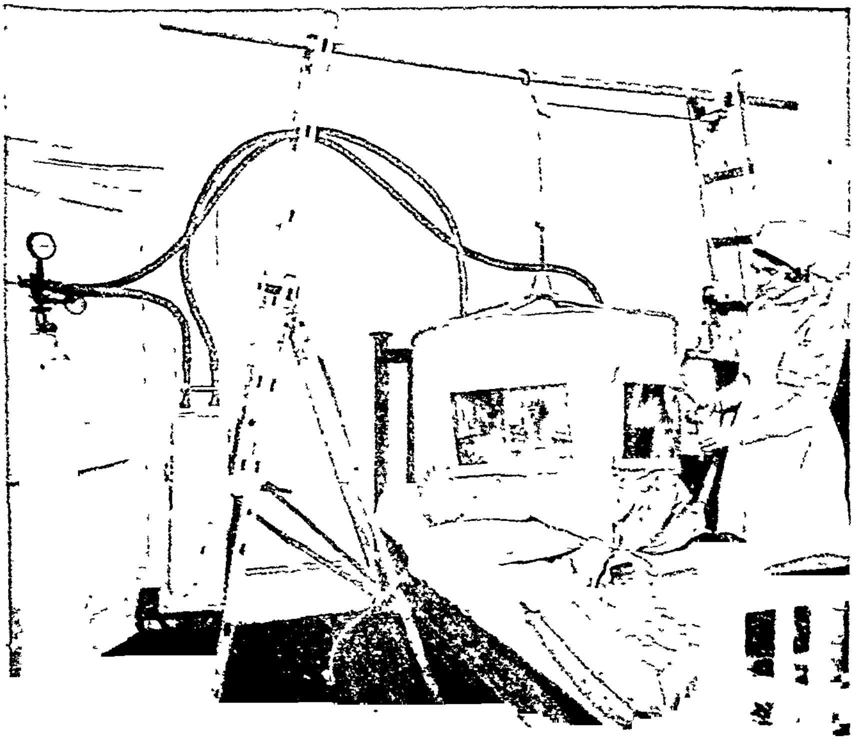


Diagram of bed tent.

The mechanism consists of two tins with radiating fins which are let in through the roof of the tent and fixed in position by bolts which can be removed at will. The tins are filled with lumps of ice or ice and salt in layers, so that the air inside the tent is cooled, and the moisture from the patient condenses on the surface and on the fins of the two tins, and runs off down the funnels (Fig. 1, F) to be collected outside the tent. As the ice melts the water can be run off by means of a thin rubber tube, which is threaded through the wider tube from the funnels. As a mixture of ice and water is of the same temperature as melting ice it is an obvious economy of ice to wait until most of it is melted before running off the water. As little as 36 lb. of ice has been required in the 24 hours, which costs less than 1*s.* 6*d.* at wholesale prices. Both tubes can be controlled by a single clip outside the tent: but as the inner tube from the ice tin is longer than the outer tube the flow of water from the ice tin can be controlled separately by a clip, and in this case it is essential that the end of the wide tube should lie beneath water, or otherwise there will be a leak from the tent through the funnel to the outside air. The funnels are made of the same waterproof fabric as the tent, and are suspended from the roof by means of fine chains.

FIG. 2



The portable bed tent in use. The nurse is taking a sample for oxygen analysis.

If ice alone is used in rather big lumps, the dry bulb thermometer usually remains about 65° F., and the relative humidity deduced from the wet bulb reading varies between 50 per cent. and 70 per cent.[9] The cooling power on

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* The tent is being marketed by Messrs. Siebe Gorman and Co., Ltd., 187, Westminster Bridge-road, London, S.E. 1. Inquiries from the midlands should be made to Mr. J. Muirhead, 11, Cannon Hill-road, Birmingham.

April 29th, 1932, as determined by Hill's kata-thermometer, was 5·8 with a dry bulb of 66° F., and a humidity of 59 per cent.; while on May 5th it was also 5·8, with a humidity of 69 per cent. Since for comfort the cooling power should not be below 6 in summer or 5 in winter, the cooling power in the tent is reasonable, though it might perhaps be increased with advantage by increasing the radiating power of the tins, though care would have to be taken to prevent the temperature inside the tent from falling too low; further observations are being made on this point.

The tent itself (Fig. 2) is provided with two large celluloid windows in front and two behind. The "sleeve" through which food and drink, &c., are passed is placed towards the front beneath the windows, and below the latter there is, in the more recent model, a piece of rubber tube passing into the tent which can be clipped on the inside; this is to give confidence to the patient, who, if he wished, could take off the clip and breathe through the tube into the outside air; it might also be used for "tube feeding." Dry and wet bulb thermometers (Mason's hygrometer) can be suspended from the roof of the tent, and a piece of lead tubing of very fine bore passes into the tent at the side through which samples of air in the tent are obtained for analysis.

The modified Cecil-Plummer injector which Mr. R. W. G. Davis suggested and has made for me is screwed into the top of a 100-cubic foot oxygen cylinder. From this injector two rubber tubes lead one through the roof towards the bottom of the tent, and the other to the CO_2 absorption box; another tube connects the CO_2 absorption box with the tent, the whole forming a closed circuit. The injector supplies oxygen to the circuit, and at the same time circulates the air from the tent through the CO_2 absorption box and round again to the tent. The rate of supply of oxygen with the corresponding rate at which air is being driven round the circuit is shown by the dial at the top of the injector; it can be varied by turning a handle—this is a new feature. The lower dial shows the pressure of oxygen in the cylinder. The injector is also provided with a by-pass by which the oxygen can be made to pass directly into the circuit without passing through the injector, so that at the beginning of treatment the percentage of oxygen is quickly raised. The by-pass is then turned off, and the injector set to deliver the required amount of oxygen.

It is never necessary to deliver more than 3 litres of oxygen a minute, and 2 or even 1 or 1½ litres a minute are often sufficient to keep up the desired percentage. The economy in oxygen depends on the tent being as air-tight as possible, and to effect this the lower part of the tent should be wrapped closely round the patient's abdomen and kept tight by means of a rubber or elastic bandage at A. One garment at most should intervene between the body and the tent where it is fixed by the belt; the rest of the clothes covering the body are pushed right up into the tent, and the lower part of the body is covered with pyjama trousers and bed-clothes. The extra length of the tent below A is for children who can be pushed right up into it and the opening tied with a piece of bandage. When adults are treated this part of the tent is folded up—hence its shape.

The CO_2 absorption box is filled in the upside down position after unscrewing its base. A very efficient mixture to use for absorption is alternate layers of soda lime and flaked caustic soda; the caustic soda is mainly responsible for the absorption, while the soda lime keeps the layers of caustic soda apart and so prevents the flakes from becoming stuck together in lumps. With this mixture it is found that one filling of the tin lasts during several days of continuous use. In my experience soda lime by itself soon becomes exhausted. Messrs. Siebe Gorman supply fused caustic soda on coke, which is also effective; but the tin gets much hotter than with the above mixture. The same firm provides soda lime tinted light green, which turns brown when it becomes exhausted. A window can be provided at the top of the tin near the exit tube, and if a little of this tinted soda lime is poured in first of all some indication may be given when the absorption is giving out; however, so far I have not tried this in practice, but have relied on analysis of the air of the tent for CO_2.

Any percentage of CO_2 can be used in the tent by altering the by-pass on the CO_2 absorption box (C) so that the air flows partly through the box and partly through the by-pass. It is probably the case that CO_2 is just as important or more important than O_2 in some conditions—e.g., CO poisoning—but our knowledge of its value in pneumonia is still scanty. A very good percentage to try is 40 per cent. of O_2 and 2–3 per cent. of CO_2. The correct position of the by-pass tap can only be obtained by experimenting. The tap should be arranged in the half-way position in the first place, and after five or ten minutes the CO_2 in the tent is determined and further adjustment of the tap made.

Owing to the nature of the cooling and drying arrangements the present oxygen tent is a good deal heavier than those previously described, and it is essential to have a substantial supporting structure. Two patterns have been made. The one shown in Fig. 2 is the portable apparatus; the extension ladders withdraw into a length of 5 ft., and the bar unscrews into two pieces so as to fit on to the luggage carrier of a car. The ice tins are removed, the tent folds up flat round its roof, and can be re-erected anywhere in less than half an hour. But for hospital work a movable trolley which will take the oxygen cylinder and CO_2 absorption box and at the same time suspend the tent over a bed would be of undoubted convenience. A trolley is at present in use at Guy's Hospital; but its final form is not yet complete.

When in use the tent requires more or less continuous supervision, at any rate until the nurse is thoroughly familiar with it. The ice tins must be kept filled, and the rate of flow of the oxygen observed from time to time. It is essential to be able to determine the composition of the air in the tent periodically—e.g., at hourly intervals—and this is of special importance if CO_2 is being employed. Two pieces of apparatus † have been devised by means of which sufficiently accurate determinations of the O_2 and CO_2 can be made by a nurse after two or three minutes' instruction. The "clinical oxygen-measuring pipette" is described by Shackle and the author in an accompanying note. The dry bulb thermometer should read about 65° F., and the wet bulb should read at least 8° F. lower. No matches or cigarettes or electrical appliances—e.g., heating pads—are allowed in the tent, and lamps and naked flames must be kept well away from it. Several disasters have been reported elsewhere from neglect of these precautions.

Emphasis has been laid on the tent being air-tight, so as to economise oxygen. No attempt is made to secure this in the American patterns, and Barach [7] has argued that a leak may be of value to ensure the replacement of the rare gases of the atmosphere which may act like vitamins, and may be used up by the patient—both highly speculative propositions as he admits. It is difficult to follow the argument. Some leakage of air into the tent may take place when the sleeve is open in all patterns of tent; but when the tent is closed up the leak will be entirely outwards, and a brisk flow of oxygen will the more quickly drive out the air originally in the tent with its rare gases. Therefore the smaller the leak the more will the rare gases be conserved, because the oxygen formed by electrolysis presumably contains even smaller traces of rare gases than atmospheric air does owing to their slight solubility in water.

INDICATIONS

So far the tent has been used for some 30 patients at Guy's Hospital and Lewisham Hospital. The results are not yet numerous enough for analysis;

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† Demonstrated at the International Physiological Congress, Boston, 1929.

but a few instances of its value in the treatment of pneumonia may be given.

A man, aged 67, with untreated diabetes of several years' duration was admitted to Guy's Hospital on Feb. 16th, 1932, with hypostatic pneumonia and bronchitis. The prognosis was grave. He remained in the tent from 7 P.M. till 10 A.M. the next morning; he was much better, and eventually went out with lungs pretty clear of physical signs.

A baby aged 2, admitted to Guy's Hospital on June 8th, 1932, was very ill with pneumonia. Prognosis almost hopeless. She was put in the tent intermittently for 228 hours; each time she was put in the temperature went down to normal, rising again when she was taken out; she made a complete recovery.

A boy, aged 7, was admitted to Lewisham Hospital on June 2nd, 1932. He was considered "moribund" by the medical officer, and was too ill to protest at being put in the tent at 11 A.M.; at 5 P.M. he had recovered sufficiently to want to come out; he was kept in till 8 A.M. the next day, and on the two following nights for 14 and 15 hours respectively; he made a complete recovery.

I have some evidence that a mixture of CO_2 and O_2 in the tent may be of value in frequently occurring attacks of asthma; but more observations are required.

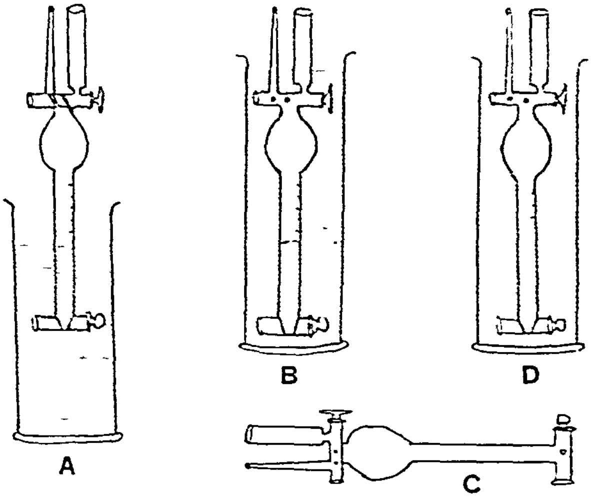
There is already a fairly extensive literature on treatment with oxygen chambers and oxygen tents. Good results, tested during and after muscular work by observations on the respiratory exchange, &c., were obtained by J. M. H. Campbell and myself for chronic bronchitis, emphysema, and myocardial degeneration[5]; we suggested that the same principle was involved in this treatment as in treatment by compressed air which was initiated years ago at the Brompton Hospital. Binger[10] has treated pneumonia patients, and Barach,[11] dealing with 100 patients, claims beneficial results; one patient lived in a tent for two months, which appeared to prolong his life until he had developed immunological resistance to the disease. Barach and Richards[13] obtained good results in congestive cardiac failure, a finding that I can confirm in two cases. Barach[12] has also found that the cardiac pain due to coronary sclerosis was relieved; a patient of mine with frequent attacks of angina found she was better in the tent.

This by no means exhausts the indications for treatment. Since a tent is merely an efficient means of giving oxygen with or without CO_2, it should be valuable in carbon monoxide poisoning, shock, post-anæsthetic pneumonia, methæmoglobinæmia, &c.

DIAGNOSIS

By this is meant the problem of determining when oxygen should be given. It is not a very simple one because, though every one would admit that oxygen should be given when there is arterial desaturation (anoxic cyanosis), there may be conditions when it may be of value even though the arterial saturation is normal. For instance, the heart's action may be so defective that the coronary circulation is slowed, and the muscle is deprived of its normal supply of oxygen, though the local increase of CO_2 will enable it to get a larger proportion than normal out of the circulating blood. By giving oxygen this state of affairs may be remedied not so much by the comparatively small extra volume that will be taken up by the arterial blood as by the very much higher partial pressure it will exert. Again, observations by J. M. H. Campbell, G. H. Hunt and myself[14] showed that while decided cyanosis always meant arterial desaturation, the reverse was not always true. In some cases of arterial desaturation there was no cyanosis. Cyanosis is largely a question of peripheral stasis in the parts observed—lips, cheeks, ears, finger-nails, &c. The conclusion is that in all cases of temporary cyanosis oxygen should probably be given; congenital heart disease and polycythæmia are rightly excluded on this definition. But in all cases of breathlessness the administration of oxygen should at least be considered, excluding of course the breathlessness of diabetes and uræmia. When in doubt its effect should be tested, and the best way to do this is to give pure oxygen, using the face mask and large rubber bag that every doctor possesses for giving nitrous oxide gas. If oxygen is given for five or ten minutes in this way the patient will be able to tell if relief is experienced and any improvement in colour may be noticed by the doctor and then a more practicable method of administration may be chosen, and among them the oxygen bed tent should at least be considered.

FIG. 3



A clinical CO_2-measuring pipette.

This work was begun under the auspices of the "Clinical Uses of Oxygen" Committee of the Medical Research Council, and the expenses have been defrayed by grants from the Council, to whom my best thanks are due. I should like to thank the sisters and nursing staff of Guy's Hospital and Lewisham Hospital for their willing coöperation and hard work, and the same applies to many of my ward clerks. I wish to thank Mr. A. E. Gould for his help in making the apparatus.

A CLINICAL CO_2-MEASURING PIPETTE

This pipette, shown in Fig. 3, is a modification of Fridericia's alveolar CO_2 tensimeter.

It is filled with water by placing it in a cylinder of water; both taps are open as at A. The top tap is then closed and the nozzle of the pipette is connected to the sampling tube of the tent. The pipette is lifted approximately half way out of the water in the cylinder. On turning the top tap the water runs down in the pipette as far as the level of the water in the cylinder drawing air from the tent *after* it, as shown at A. It is not necessary to take in any exact quantity of air. The top tap is then closed, the apparatus disconnected and lowered again in the cylinder, and left for two or three minutes to equalise the temperature, as shown at B. The volume of air in the pipette is read at the lower level of the meniscus, while the pipette is standing upright in the cylinder. Then the pipette is raised half way out of the cylinder; the funnel is filled with 15 per cent. caustic soda, which is allowed to run slowly into the pipette. The pipette is then further raised from the cylinder and the lower tap closed: the pipette is taken out of the cylinder and turned up and down several times, as at C. The CO_2 is absorbed by this means. Care is taken to see that the space below the lower tap is filled with water before the tap is opened beneath the surface of the water, and the pipette is again lowered into the cylinder. After a few minutes to equalise the temperature, the level of water is read again, as at D; the difference between the two readings, without any further calculation, gives the percentage of CO_2 in the atmosphere of the tent. Since the pipette down to the zero mark in the middle of the stem has a volume of 20 c.cm., and the stem is graduated in 10ths of a c.cm., each division will correspond to a 0·5 per cent. CO_2. After the determination has been made, rinse through with some water and then with some 1 per cent. sulphuric acid solution to get rid of the alkali.

CONCLUSIONS

An "oxygen bed tent" is described with the following new features: (1) Cooling and drying are effected by means of ice tins let in through the roof of the tent. (2) Ventilation is produced by means of an injector as described by Cecil and Plummer; but the stream of oxygen with the ventilation can be varied. (3) CO_2 is administered by partially short circuiting the CO_2 absorption box. (4) A clinical CO_2-measuring pipette is described.

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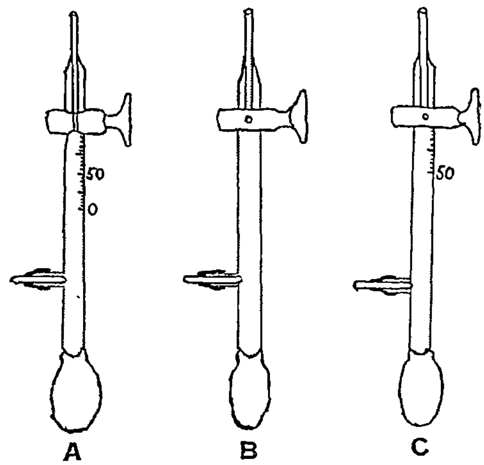
A CLINICAL OXYGEN-MEASURING PIPETTE

By E. P. Poulton and J. W. Shackle

The top cubic centimetre of the pipette (Fig. 4) is graduated in percentages; the diameter of the tube is chosen so that the zero mark reaches to about 4 cm. below the tap. The rubber bulb has a capacity of ½ oz.

Fig. 4



A clinical O_2-measuring pipette

The pipette is filled with a mixture of pyrogallic acid in caustic potash made up as follows: 70 g. of caustic potash in sticks is dissolved in 100 c.cm. water; to this mixture (i.e., 100 c.cm.) is added 20 g. pyrogallic acid. The side tube attached to the lower end of the pipette contains a projecting piece of glass rod fixed to the side tube by a piece of rubber tubing, so that the glass rod can slide backwards and forwards inside the tube. With the tap open, the level of the pyrogallic acid is adjusted to the zero mark by altering the position of the glass rod, as at A. The rubber bulb is squeezed so that the pyrogallic acid runs just above the tap, which is then turned (B).

The nozzle of the pipette is attached to the sampling tube of the tent and the tap opened for one second and then closed. The pipette is then disconnected from the tent and turned up and down until the air bubble ceases to contract. The height to which the level of the pyrogallic acid rises above the zero mark in the pipette gives the percentage of oxygen in the tent. In C this is seen to be 40 per cent. It is better not to allow the bubble to pass into the rubber bulb, as there may be difficulty in getting it back again; to prevent this the pipette can be fixed in a stand which keeps the tap on a higher level than the bulb. This is important because when not in use there should always be about a cubic centimetre of gas in the pipette, and the tap should be closed; if the pipette is always kept in position B the tension-length curve of the rubber bulb becomes altered, so that in a determination less than 1 c.cm. will be sucked into the pipette, and there will be an error in the final reading. The accuracy was within 5 per cent., when tested against a Haldane gas analysis apparatus; this is sufficient for the purpose. The following percentage figures were obtained by J. W. S. (Haldane values in italics): gas mixture A: 57, 55, 56; *54·1*. B: 62, 63, 64; *65·6*. C: 73, 88, 88, 81; *87*.

Clinical and Laboratory Notes

AN EASY METHOD OF DEMONSTRATING SOME OF THE VIRUS BODIES

By Alfred C. Coles, M.D., D.Sc., M.R.C.P. Lond., F.R.S. Edin.

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It is now generally, but not universally, thought that virus bodies are living organisms distinguishable from bacteria only by their small size, and, as Prof. J. C. G. Ledingham says, it is a "recently ascertained fact that there exists a group of viruses—variola, vaccinia, fowl-pox, ectromelia, molluscum contagiosum, &c.—whose individual elements are just big enough to be detectable by appropriate staining methods."

The usual method of staining is to fix the air-dried films in absolute alcohol and subject them to long staining with Giemsa, say for 12 to 48 hours, preferably changing the Giemsa two or three times. Incidentally, I may mention that for the last 20 years I have used industrial methylated spirit both for fixing and making up the stains instead of absolute alcohol. It is sometimes advisable to soak the air-dried films in normal saline, Ringer's solution, or even distilled water for ten minutes or so, in order to remove the layer of serum surrounding the bodies and so facilitate the staining; the films are then fixed in alcohol and stained in the usual way. Other methods are first to treat the films with hot Loeffler's mordant and subsequently stain them in gentian or methyl-violet or carbol-fuchsin, as in the process of flagella staining. Personally I prefer the use of Giemsa.

For some time past I have demonstrated these small bodies by simply mixing a drop of the material containing the virus with a drop of Indian ink and spreading a thin film as in Burri's method. Preparations made as suggested can be examined with the highest powers of the microscope, either by ordinary or by dark-field illumination.

A method I have adopted for some years is to examine, under dark-ground illumination, air dried, unfixed, unstained, and unmounted smears made on a cover-glass or slide. This very simple and rapid process shows the elementary or virus bodies in many cases exceedingly brilliantly. The method I use is as follows:—

A film of the material containing these bodies is spread not too thinly on a scrupulously clean slide or cover-glass Allow the smear to dry thoroughly in the air. Examine this smear by any form of dark ground illumination with an objective whose N.A. does not exceed 0·65 I use a ⅓ inch or 8 mm. apo. objective of N A. 0·65, and obtain a dark ground by merely turning in an expanding stop below the condenser which is always on the microscope for general use—viz , Watson's parachromatic

If the air dried film on the slide be examined without a cover-glass then the tube length of the microscope must be lengthened, this in the case of the Leitz 8 mm. is from the normal tube length of 170 to about 210 mm.; in the Zeiss 8 mm. from 160 to about 185 mm. in order to correct for the absence of a cover. When the correct tube length of a given objective on an uncovered film is once determined it is constant for that objective on any smear notwithstanding the thickness of the slide, whilst the tube length of an object glass varies with the varying thickness of any cover-glass. If, however, a cover-glass is laid on the film on the slide, or if the cover-glass preparation is laid smear downwards on a clean slide, and kept in position by a little plasticine or a spot of melted paraffin, the tube length of the microscope will need very little alteration from that of the normal. Lenses are very sensitive to tube length, especially on dark fields

Of course the ordinary oil-immersion dark-ground illuminators on the market, when oiled to the slide in the usual way, will give a very bright dark ground, but the simpler method of using a stop of suitable size at the back of an ordinary dry condenser gives a very brilliant image with the ordinary paraffin lamp. The usual ⅙ inch objective found on most medical microscopes can be used if its N.A. is not over 0·65, or it can easily be stopped down to that amount by a funnel or stop behind the back lens, but even then it can only be used when there is a cover-glass on the film, as it will not work through an uncovered film.

The 8 mm. or ⅓ inch objective can be used with any eye-piece from No. 0 to the compensating ocular 18, and I find that either the ordinary No. 4 or the compensating ocular 6 or 8 gives excellent results

As a matter of fact I can see the virus bodies of molluscum contagiosum well with even a common ⅔ inch of N A. 0·25 (costing pre-war, 15*s.*) with any of the higher eye-pieces. I have also taken some photomicrographs of these bodies on an old air-dried smear on the slide made three years ago, with an apo ⅔ inch or 16 mm. of N.A. 0·30 and a compensating ocular 8 giving a camera magnification of 160 diameters. In these photographs the virus bodies come out very sharply

Films made on slides have many advantages over those made on a cover glass They are much more easily manipulated, and films of control material may be made by the side of the infected material and so they can be compared; further, if these films are uncovered the position of the best colony of virus bodies, which are often in almost pure cultures, can be marked with a diamond marker and their position logged. Then the slide may be removed, fixed in alcohol, and stained in Giemsa, and the marked organisms can be examined under the 1/12 objective in the usual way.

Permanent preparations can be made from air-dried unstained films by painting round the margins of the cover-glass a ring of melted paraffin and then subsequently a layer of any of the usual cements.

By the above simple method I have been able to examine many of the elementary or virus bodies, among others those of vaccinia, varicella, herpes labialis and zoster, pemphigus, and molluscum contagiosum.* It only takes two to five minutes from the time the smear is made.

When examined in this way the virus bodies in the dry unstained condition appear as distinct sharply defined bright round or oval bodies, singly, in pairs, or in dumb-bell forms, and in short chains, and when experience has been acquired they cannot easily be mistaken, especially when a colony in pure culture is found. So far as I know at present, there is only one possible fallacy; that is, the surface of some glass slides and cover-slips are covered with innumerable roundish minute bodies which on a dark field might be confused with the viruses. This condition cannot be removed by any method of cleaning, and I obviate this by examining the clean slides by dark-ground illumination before spreading the film, and so eliminate any doubtful slides

Unfortunately I am only able to obtain specimens of the commoner virus diseases, and I should be grateful if some of the workers on these small organisms would kindly spare me any unstained films, or any stained films showing some of the inclusion bodies characteristic of many of these diseases.

TWISTED OVARIAN CYST WITH ABSENCE OF THE UTERUS

By N. J. Nicholson, M.B. Edin.
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A woman, aged 27, was admitted to the Leicester Royal Infirmary on Sept. 29th, 1932. Violent pain had begun in the right iliac fossa that afternoon, and she had vomited afterwards. The bowels were open satisfactorily, but there had been some pain during micturition on that day. She said she had never menstruated.

She was a pale, thin woman. her tongue was in fair condition, and there was tenderness and rigidity in the right iliac fossa It was noticed that pubic hairs were absent, but there were sparse hairs on the labia. The vulva appeared normal. The vagina admitted one finger. The top of the vagina felt dome-like, and no cervix could be palpated. The finger felt a rounded swelling in the pelvis not palpable through the abdomen. There was tenderness to the right on rectal examination. Her temperature was 98·2° F., her pulse-rate 96, and her respiration rate 24.

The patient had a general anæsthetic, and a right paramedian incision was made. A full bladder presented, and a glass catheter was passed. Behind the bladder in the pelvis lay a dark red mass. The upper abdomen was packed off, the patient having been placed in the Trendelenburg position. The mass was brought out of the pelvis; it was roughly spherical, and rather larger than a cricket-ball. It had a pedicle attached to the right side of the pelvis, and the pedicle was twisted two and a half times in a clockwise direction. The twists were undone, the pedicle was clamped and ligatured, and the cyst was removed. Thereafter a better view of the pelvis was obtained. The left ovary was healthy, except for one or two retention cysts in process of extrusion. Associated with it was a structure 1½ in long, apparently tubal; it had a fimbriated infundibulum, but the ampulla tapered away medially into the floor of the pelvis and ended about 1½ in. from its ostium. The floor of the pelvis was smooth except for a wrinkle of peritoneum, running from side to side, uniform in thickness There was nothing suggestive of a rudimentary uterus. On the right side of the pelvis was the pedicle of the cyst which had been removed, corresponding in position to the ovary and tube of the opposite side. The rectum and bladder were healthy. The stump of the pedicle was peritonised, the cysts were removed from the left ovary, the appendix was removed, and the abdomen closed.

This patient has three brothers and four sisters. The sisters menstruate naturally. None of her brothers or sisters have any deformities The patient herself has had no vicarious menstruation or molimina. Her breasts began to enlarge when she was 16; no enlargement of thyroid or parotid was noticed then. Her breasts were of average size, but the nipples pale and undeveloped. There were no hairs in the axillæ.

The points of interest in the case are (1) the complete absence of the uterus; (2) the influence of this in causing twisting of the ovarian pedicle; (3) the remnants of incompletely canalised and unfused Mullerian ducts, represented probably by the peritoneal fold across pelvis; and (4) the failure of complete sexual characteristics to develop in spite of the presence of an ovary.

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* Since the above was written I have confirmed my findings made in 1929 that the virus bodies of foot-and-mouth disease are easily seen in the filtrate by this and other methods In a paper shortly to be published a description of these elementary bodies with photographs will appear.

I am indebted to Mr. R. S. Lawson, hon. surgeon to the infirmary. for permission to deal with the case and to publish it.

IODOFORM POISONING FOLLOWING THE USE OF B.I.P.P.

By R. Cunliffe Shaw, F.R.C.S. Eng.
HON. ASSISTANT SURGEON TO PRESTON ROYAL INFIRMARY

An intelligent girl, aged 8. was admitted to the Preston Royal Infirmary with tuberculous adenitis involving the glands in the submaxillary triangle on the right side of the neck. On April 25th, 1932, at 3.30 P.M., I removed the gland and evacuated the contents of a tuberculous abscess, the floor of which was densely adherent to the internal jugular vein. In dissecting it free the vein was punctured and the lateral ligature applied; apart from this the operation was carried out on the usual lines. The wound was swabbed with ether and smeared with B.I.P.P., the surplus being removed on a dry gauze swab; about 1 c.cm. of the paste was used. The wound was closed with a rubber drain.

The following startling train of symptoms ensued.

At 9 P.M. on the evening of operation there was a pulse-rate of 132, and she appeared somewhat restless, but settled down for a short time after nepenthe ♏ 10. At 6 A.M. the following morning she became suddenly delirious, with a barely countable pulse of 178, and a temperature of 100° F. Camphor in oil was given hypodermically, and the pulse-volume improved. Shortly after this there was an evacuation of bulky stools containing large quantities of mucus and blood combined with a blood-stained vomit. At 9.45 A.M. the pulse was barely perceptible, the respirations 32, of the Cheyne-Stokes type, and the temperature 99°. The child was still delirious, she vomited everything given by the mouth, and there was constant tenesmus and passage of blood and mucus; the skin was hot and dry, but free from any sign of rash.

I must confess that after having used B.I.P.P. so often without untoward result it never occurred to me at this stage that I was dealing with iodoform poisoning. The various suggestions made, such as the infection of the vascular system with a massive dose of tuberculous toxins or the presence of thrombosis and emboli, were easily discounted after further consideration.

The condition reached the crisis at 4 P.M. on the day after operation. The hourly pulse-rate from 10 A.M. to 4 P.M. on this day was as follows: 172, 176, 164, 184, 180, 184, 188. Collapse set in, and the temperature fell to 97°, the fall being accompanied by a low muttering delirium. It was only at this juncture that the diagnosis of iodoform poisoning occurred to me. The wound was opened at both ends, and irrigated with a 10 per cent. solution of sodium bicarbonate, and was noticed that an appreciable amount of iodoform appeared in the washing. Following the irrigations, moist dressings of the same solution were applied. Glucose was given per rectum, and small quantities of arrowroot by the mouth, although the latter were generally rejected. Salines were also given subcutaneously and intravenously.

The results of this treatment were striking; the pulse-rate fell to 132, the respirations became regular and slowed down to 18–20, and the temperature rose to 99°. The stools, although still frequent, became only slightly blood-stained. The irrigations were continued three-hourly for the next two days, and was very noticeable that after the majority of the washouts the pulse-rates showed a considerable fall, whilst during the period before the next irrigation there was a steady rise towards the former level.

On the fourth day there was evidence of a subsidence of the intestinal irritation and a general fall in the average pulse-rate, but a new symptom made its appearance. The child lay in a drowsy state responding only to loud-spoken questions, and giving muttered replies. The pupils were contracted, and she lay in a posi [illegible] condition resembling the stage of [illegible] the concussion. The stomach w [illegible] would retain only small quantities of fluids and semi-solids; vomiting did not cease until the sixth day. During this period the wound irrigation was gradually discontinued and the child was fed with small quantities of sweet fluids, and 20 per cent. of glucose was given per rectum. Her movements in bed were restricted by sand-bags and sheets to prevent her sitting up suddenly, for fear of fatal cardiac syncope. The condition of cerebral irritation gradually subsided after two or three days, and was followed by a drowsy lethargic status, during which she slept most of the day, and from which she slowly recovered to normal mentality.

In this particular case I am convinced that apart from an evident idiosyncrasy to iodoform the symptoms were aggravated by the use of a paste which was too thick in consistency, preventing the spreading of an even film of the emulsion over the wound; in addition, the usage of ether for washing out the wound would also assist in the solution of the small particles of iodoform and their absorption by the tissues.

In looking through the published records, one is impressed by the rarity of reported cases, and by the absence of caution in those people who have advocated the use of iodoform preparations for surgical purposes. For example, Moorhof, in 1905, in advising the use of iodoform bone-plugs, stated that in 220 cases he had never seen one of iodism, and in a girl of 14 he had used 200 g. of his iodoform paste. The cases that have been reported (and they are generally to be found in the literature of the close of the last century and the first decade of this) fall into three groups:—

(1) Those which exhibit cutaneous eruptions only.

(2) Those where psychological phenomena were the principal symptoms.

(3) Those which exhibit a dramatic constitutional reaction characterised by: rapid pulse-rate, high temperature and dry skin, vomiting and diarrhœa, great restlessness and delirium, and rapid loss of weight.

It is suggested that this latter acute type of iodoform poisoning is due to stimulation of the thyroid gland, resulting in the production of a temporary thyroid toxæmia. The case I have recorded here undoubtedly belongs to this group. It is noteworthy because it shows, firstly, the vital necessity of a correct diagnosis, and, secondly, the speedy response to treatment by irrigations, salines, and glucose.

North of England Obstetrical and Gynæcological Society.—At a recent meeting of this society, held in Manchester, Dr. F. H. Lacey delivered a presidential address on Cæsarean Section. He began by tracing the history of the operation from Roman times, and by describing early operations, one by Barlow of Bolton in 1793, and one by Trantma of Willenberg in 1600. The reported mortality of 84 per cent. from 1737–1860 was reduced, he said, by Porro in 1877 as a result of supravaginal hysterectomy being also performed. After referring to Sanger's operation in 1882, and Osiurder's lower segment operation in 1865, he quoted more recent figures such as those collected by Routh (6·1 per cent. in 602 cases for 1906–1910) and Spencer (maternal mortality 3·3 per cent., and infantile mortality 10 per cent. in 120 cases). The reasons, he thought, for the present abuse of the operation were: (1) demand on the part of the patient for a shorter and less painful labour; (2) an exaggerated idea of the value of the fœtal life as compared with that of the mother; and (3) extension of indications to include the convenience of husband, patient, or doctor. The lower segment operation was preferable if the patient was in labour or was potentially septic, and when this variety of operation was performed the transverse incision was desirable. Dr. Lacey then gave an analysis of 200 of his recent hospital operations. There were only two deaths in the series—one from broncho-pneumonia and the other in a case complicated by many adhesions which followed two previous Cæsarean sections. One operation, he said, did not preclude a subsequent normal confinement. Cæsarean section for eclampsia, although not popular in this country, was apparently more successful on the continent. Open ether was the anæsthetic used in the majority of cases, but spinal and other special forms of anæsthesia might be strongly indicated in such conditions as toxæmia of pregnancy.

MEDICAL SOCIETIES

TUBERCULOSIS ASSOCIATION

AT a meeting of this association, which was held in London on Jan. 20th, Prof. S. LYLE CUMMINS spoke on

Tuberculosis and the South African Native

He said that to the student of tuberculosis the South African Tuberculosis Report[1] presented most interesting problems. One of these was the relation between the extreme tuberculosis susceptibility observed by Borrel in the Senegalese levies brought to France for the war and thus brought into contact with tuberculous infection for the first time, and the almost equally marked susceptibility of the native miners on the Rand, recruited from the territories where tuberculosis was now known to be endemic. The Borrel type might be correctly described as the tuberculosis of virgin soil, while the South African type would be better called the tuberculosis of hyper-allergic soil. The very extensive and important tuberculin tests carried out in the course of the South African investigation proved that those African mine recruits were not merely tuberculin-sensitive, but were so markedly sensitive as to present a new phenomenon in tuberculo-allergy. Whereas in Wales only 2·3 per cent. of adult males reacted to an intradermal test of 1 in 10 million and only 5·5 to 1 in 1 million dilution of tuberculin, the corresponding figures for the South African mine recruits were 48·6 and 51·5, according to the observations recorded in the report. These figures justified the application to the tuberculosis of these persons of the term "tuberculosis of hyper-allergic soil." Follow-up work had proved quite definitely that these hyper-allergic persons were liable to acute fatal tuberculosis very similar to that observed by Borrel in non-reactors; and, further, that their liability varied directly with the severity of their reactions to tuberculin. Those natives whose reactions were noted as "positive plus" on arrival were found to be more liable to develop tuberculosis during subsequent mining service than the natives who were merely recorded as "positive," and the latter were more liable than those classified as "negative." Prof. Cummins pointed out, however, that the dilution of tuberculin used for these tests was very high—1 in 5000; observations in Wales had shown that no less than 62·5 per cent. of adult males who were negative to 1/5000 tuberculin were positive to 1/1000, 87·5 per cent. to 1/100, and 99 per cent. to 1/10. Thus the "negative" category in the South African tests must have included a large number of those who would have been reckoned positive if more concentrated tuberculin had been used. This South African group might also have included a certain small proportion of genuine "virgin-soil" natives of the Borrel type, so that the number of positives included in the negative group could not be deduced from any analogy with the figures from Wales. There was evidence that the Borrel type of "virgin-soil" susceptibility was not yet entirely lost as a phenomenon of the industrialisation of African natives. The prevalence of the "hyper-allergic" type was, however, of greater practical importance, since this implied that contact with subinfections had failed to produce in these natives any degree of tuberculo-resistance comparable to that of Europeans.

ACQUIRED RESISTANCE

Were they to infer from this that the theory of acquired resistance to tuberculosis resulting from subinfection was untenable, and that some other explanation of the relative immunity of Europeans as compared with Africans must be sought for? Prof. Cummins held that such an inference would be rash. In experimental tuberculosis, the fact that a previous mild infection conferred marked relative immunity to subsequent reinfection was established. Even among "hyper-allergic" *Africans, clinical* observations proved that the long-service natives, exposed to occasional infection over long periods, and at last developing the disease, tended to possess a greater power of controlling their temperature and of keeping their systemic disturbance within bounds than those natives who developed their tuberculosis earlier in their mining service. What, then, of the increased liability to develop tuberculosis which had been shown to go with markedly positive tuberculin reactions in these "hyper-allergic" mine recruits? How did it happen that the increased exposure to infection which must presumably underlie these "positive plus" reactions led, in the case of recruits, to increased liability, while the prolonged opportunities for getting infected which appertained to long mine service led, not to increased liability but to increased toleration and increased resistance? The answer would appear to be that exposure to heavy infection under tribal conditions was one thing, and prolonged exposure to casual infection on the mines quite another. The first led to the establishment of larval but often active lesions which, while producing marked allergy, were very liable to flare up into generalised disease; the second led on to the development of some degree of resistance so that the disease when it developed tended to assume a more benign character. The lesions which underlay the hyper-allergic type in these natives were apparently impossible to detect by routine physical examination, and were probably situated in intrathoracic and intra-abdominal glands, where they escaped diagnosis. It might be assumed that the more severe reactions were associated with a greater liability to disease because they were the result of heavier infections and more active lesions. The less reactive groups owed their diminished risk to the fact that in them the lesions of previous infection were of smaller extent and less activity, calculated to lead to a slighter degree of allergic potential. The "positive plus" reactors possessed what Prof. Cummins had described as an "acquired liability" to the disease.

ALLERGY DISTINCT FROM IMMUNITY

If this concept were accepted, then the important biological deduction followed that, in tuberculosis, allergy could be distinct from immunity. It was clear that these natives, exposed to infection under tribal conditions, responded not so much by the production of tuberculo-immunity as by the development of extreme tuberculo-allergy, and though it was true that this hyper-allergic phase might be an early stage on the road to resistance, it was not the same thing as resistance, nor was it even accompanied by any appreciable amount of resistance to the disease. Its development would appear to render the individual liable to the toxic phenomena of over-severe reactions to auto-tuberculin which resulted in acute and fatal symptoms when localised lesions became generalised under physiological stresses.

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[1] See THE LANCET, Jan. 14th, p. 100.

Under tribal conditions the African appeared to tolerate tuberculous infection. It was only when he was exposed to new and trying conditions that his larval lesions showed a tendency to sudden generalisation, and to pass into a type of disease so rapidly fatal that the average period of survival in the mine hospitals was only about 33 days.

The African native seemed to differ from the European in his response to tuberculous infection, and his inadequacy might, perhaps, be similar to that manifested by the special strains of guinea-pigs produced through in-breeding by Lewis and Loomis. Tuberculosis had probably become endemic in the native territories of South Africa only recently, and a much longer time and many generations might be necessary for the acquisition of enhanced powers of developing resistance by African natives.

Prof. Cummins concluded by urging that the African native, with his marked liability to tuberculosis as well as to pneumonia and other inspiratory infections, must be housed, fed, and cared for on expensive and generous lines.

At the evening session Dr. P. ELLMAN, tuberculosis officer, East Ham Tuberculosis Dispensary, read a paper on

Pulmonary Asbestosis

He spoke of the clinical, radiological, and pathological features of the condition, and of the risk of phthisis involved. He said that recent advances in their knowledge of the pneumoconioses had enabled research workers to find out certain characteristic features common to certain industries, the greater part of the work having centred round the subject of: (*a*) silicosis, depending on the presence of free silica; and (*b*) the silicatoses, arising from the inhalation of various dusts of fibrous minerals of the silicate group, including asbestos. Pulmonary asbestosis had come to be recognised as a distinct clinical entity, in which, owing to the diffuse nature of the resulting fibrosis, the degree of respiratory embarrassment was usually greater than that of an equally advanced case of silicosis, and which was in fact a more severe disease than the latter.

After a short historical survey of the development of a knowledge of pulmonary asbestosis as a clinical entity, and a review of the chemistry and industrial uses of asbestos, the speaker went on to describe the clinical features of pure pulmonary asbestosis.

CLINICAL FEATURES

The onset of symptoms and their severity depended to a great extent on the nature of the work and of the amount of dust inhaled. Symptoms might be altogether absent, despite the presence of clinical and radiological signs. In Dr. Ellman's experience, dyspnœa was one of the earliest symptoms which at first only occurred on exertion but which became progressive until ultimately dyspnœa and even orthopnœa might occur, and not only after effort. A harsh, non-productive cough and fleeting chest pains would sooner or later accompany the dyspnœa. Expectoration was often absent, and when present was usually scanty in amount and of a tenacious glairy mucoid nature. In the winter months the sputum was usually more abundant and often more purulent. True hæmoptysis had been absent in all his cases, even blood-stained expectoration having been exceptional. Night sweats and giddiness were occasionally found. Anorexia might occur early, but was usually a feature of the more advanced cases, this also being true of cyanosis. Emaciation out of all proportion to the physical signs had mostly been a distinctive feature. Finger clubbing was present in the more advanced cases where bronchiectasis was usually present. A characteristic skin lesion on the hands or legs, known as "asbestos corns," was complained of by many of his patients. While most of the symptoms enumerated were common to silicosis, the more distinctive features of asbestosis were the cyanosis and dusky complexion, anorexia, and emaciation and loss of weight out of all proportion to the physical signs. Examination of the chest showed a very limited chest expansion, especially at the bases where the fibrosis began. The apices were usually retracted. The percussion note was impaired, particularly at the bases. Auscultation showed diminution of breath sounds. The adventitious sounds—fine, dry, crackling râles—were characteristic of the disease. The physical signs, in short, were those of a basal fibrosis, usually spreading upwards. Radiological examination showed in the later stages a fine diffuse punctate mottling (in marked contrast to the coarse nodular mottling seen in silicosis), confirming the clinical evidence that the disease was characterised by a fine diffuse fibrosis beginning at and involving principally the lung bases.

PATHOLOGICAL FEATURES

The macroscopic appearance of the lungs and pleura showed that the visceral pleura was usually markedly thickened, and that the pleural sacs might be partially or even completely obliterated by dense fibrous adhesions. Microscopically the essential features of pulmonary asbestosis were: (1) a chronic interstitial fibrosis of the lung, and (2) the presence of characteristic asbestosis bodies within the alveoli and embedded in the fibrous tissue either separately or in clumps. The interstitial tissue was everywhere increased, so much so that in some cases the alveolar structure could no longer be detected, while in other areas there was evidence of compensatory emphysema. It was in and around the densely fibrosed areas that the bodies were found in the greatest profusion, and tended to occur in radially arranged clumps. Asbestosis giant cells, first described by S. R. Gloyne, might be present in the connective tissue. This giant cell was larger than the tuberculosis giant cell, and the cytoplasm had a stippled and pigmented appearance compared with the structureless caseating appearance of the tuberculosis giant cell. Asbestosis bodies—the highly characteristic golden yellow bodies found in the sputum and fibrosed lungs of asbestos workers—had been found to be present in autopsies of all cases of pulmonary asbestosis. In the sputum these bodies usually occurred singly or in groups of two or three, but when they were more numerous they might be seen in radially arranged clumps—an occurrence indicative of disintegration of lung tissue, either by simple suppurative broncho-pneumonia or by secondary tuberculous infection. The mere presence of these bodies in sputum, while they would indicate exposure to asbestos dust, could not alone justify a diagnosis of pulmonary asbestosis. The diagnosis depended on the cumulative findings: (*a*) opportunities for inhaling asbestos dust; (*b*) clinical evidence of a pulmonary fibrosis; (*c*) radiological evidence of a fine, diffuse pulmonary fibrosis; (*d*) asbestos bodies in sputum, fæces, or lung tissue. It was remarkable for how long asbestosis bodies persisted in the sputum, even when the period of exposure had been very short. In one case exposed to the dust for only ten weeks the bodies were present in the sputum nearly five years later, suggesting that once the bodies were formed they remained more or less permanently in the lung.

With regard to prognosis Dr. Ellman said that an interesting feature of the disease was the extreme length of time that elapsed as a rule between the exposure to the dust and death. The disease was progressive even after cessation of work, and there could be no doubt that without adequate protection the prognosis in pulmonary asbestosis was grave, the gravity varying directly with the degree of concentration of the dust to which the worker was exposed. The first symptoms of the disease were observed, as a general rule, from 4 to 20 years after exposure, the time depending upon the nature and concentration of the dust. He briefly outlined preventive measures before passing on to the question of

TUBERCULOSIS RISK IN ASBESTOSIS

Until quite recently it had been assumed that it was comparatively rare for a pure asbestosis to be complicated by phthisis, and some authorities still maintained that the effect of asbestos and the lung changes induced thereby were due to silica. The constant findings of the asbestosis bodies in the lungs, however, apart from anything else, refuted such an idea. The effect of inhaled dust on the development of a pulmonary infection, especially tuberculosis, was of great clinical importance. Dr. Ellman referred to E. H. Kettle's observations on various dusts, and his classification of them into active or inert substances. Both silica and asbestos came into the group of active dusts, producing active lesions in the subcutaneous tissues as well as a serious pulmonary fibrosis. Kettle had also found that the active dusts had a definite influence on a tuberculous infection, assisting the growth of tubercle bacilli. In Dr. Ellman's own series of 17 cases, the majority of whom were not at work, six had tuberculosis in addition to asbestosis, the disease being active in four of these. That there was a definite risk of tuberculosis in asbestosis appeared to be beyond a doubt, but further work would have to be done before the degree of risk could be assessed. Existing uncomplicated cases would have to be observed, and their development followed by repeated clinical and sputum examinations and serial skiagrams.

LIVERPOOL MEDICAL INSTITUTION

At a pathological meeting of this institution held on Jan. 19th, with Mr. F. Strong Heaney, Vice-President, in the chair, Prof. M. J. Stewart (Leeds) read a paper on

Silicosis and Allied Diseases of the Lungs

He said that the term anthracosis should be reserved for conditions resulting from the inhalation of carbonaceous dust, which produced a fibrosis of the lungs limited both in severity and extent. It did not conduce to tuberculosis. Dense or extensive fibrosis in coal miners was due to an accompanying or antecedent silicosis, and was met with chiefly among anthracite miners. He pointed out the difference in the gross and microscopic anatomy of silicosis and asbestosis; the former was nodular, whorled, mainly central in distribution, and involving especially the middle and upper parts of the lungs; the latter diffuse and mainly basal. The tendency to tuberculosis was significantly less in asbestosis but none the less very important. Asbestosis was definitely a more serious disease, proving fatal on an average after 13 to 15 years' employment as compared with 32 to 42 years in silicosis. Prof. Stewart gave some account of the morphology, distribution, and mode of formation of the asbestosis body, and discussed the significance of its presenec singly or in clumps in the sputum. He described the gross silico-siderotic lesion of the lungs met with in hæmatite miners in the West Cumberland ironstone field, and suggested that the victims of this severe disease were mainly those men who were employed on the dry mechanical drill from the time of its introduction in 1913 until its replacement by the wet drill a few years ago.

DISCUSSION

In the discussion which followed, Prof. J. H. Dible asked Prof. Stewart what was his experience with the polarising microscope in silicosis cases, as it appeared that in many cases of undoubted silicosis, with typical nodules, no doubly refractile bodies could be demonstrated. It seemed difficult to believe that these became dissolved subsequent to the formation of the nodule. Might the resistance of animals to pneumoconioses be due to the greater complexity and length of their upper air-passages? Man was not only less well protected in this respect but was also to some extent a mouth-breather; and these two factors contributed to his liability to respiratory disease. The toxicity of dissolved silica was definite; acute lesions such as fatty degeneration of the heart and necrosis of the liver might be produced by it. Prof. Dible agreed with Prof. Stewart that there was rarely any real difficulty in distinguishing silicotic lesions from fibrous lesions of tuberculosis.

Prof. J. M. Beattie considered that experimental work on silicosis should, if possible, be carried out by the introduction of the dust into the lungs by inhalation. The fibrous overgrowth could be produced over a comparatively short time if the dust concentration was sufficient, and if each animal was compelled to breath the dust continuously for one or two hours daily. He showed photographs in support of his contention that conditions similar to those seen in early cases of silicosis could be reproduced in guinea-pigs by the inhalation method. He still believed that the irritative action of the particles played some part in the process. In his view the prevalence of tuberculosis in cases of silicosis was due to neglect of sanitary precautions rather than to a predisposition to infection with *B. tuberculosis*.

Dr. R. H. Mole asked why asbestosis affected mainly the lower lobe of the lung, and silicosis the upper and middle areas.

Dr. C. Allan Birch asked why tuberculosis was less frequently associated with asbestosis than with silicosis.

Dr. C. O. Stallybrass referred to the frequency with which silicosis turns up in occupations in which the risk would not have been anticipated, such as in cotton carders and men engaged in polishing the heels of boots. He discussed the greatly increased danger of an associated inhalation of silica with a simultaneous infection of tuberculosis.

Dr. R. W. Gemmell said that radiologically the differential diagnosis between silicosis and tuberculosis was often impossible. It was very difficult to say where silicosis ended and tuberculosis began. It was difficult to get a history from masons, who usually denied having hæmoptysis and cough for fear of losing their job.

REPLY

In replying to the points raised in the discussion, Prof. Stewart said that undoubtedly solution of silica particles went on in the lung substance; it was the soluble silica which produced the pathological defects. Optically active particles slowly disappeared from silicotic nodules. Locally, colloidal silica produced an intense coagulated necrosis followed later by endothelial cell reaction and proliferation of fibroblasts round the lesion. In rabbits and guinea-pigs asbestos fibres certainly got into the lungs and produced asbestosis bodies, but the pathological changes were slight. He was unaware of any statistical evidence showing that cancer of the lung or bronchus was particularly common in cases of pulmonary fibrosis due to dust. He had seen at least two cases with that association. It was interesting that in animal experiments it was not possible to produce pulmonary fibrosis with ground-up asbestos. He had seen acute silicosis in (1) sandblasting; (2) the making of abrasive soaps and powders. The lesion here still tended to be focal but did not present the densely collagenous whorled character of chronic silicosis; it was rather an active fibroblastic proliferation perivascular in distribution. He was interested to hear that in Sheffield Prof. Beattie had seen only two cases of silicosis in knife-grinders in whom tuberculosis was *not* present. He agreed that Dr. Bridge's figure, 56·6 per cent., was probably an under-estimate. He thought that the tendency for pulmonary fibrosis in asbestos workers to be mainly basal was due to the character of the dust. It consisted of fine fibres of varying length, and it was probable that the action of gravity played an important part in getting them well into the parenchyma of the lung. They could only reach the lung alveoli by the fibre passing end-on. It was very difficult to have systematic X ray examination of any particular group of workmen, as they were liable either to be scared and think they would lose their job, or get inflated notions as to the possibility of compensation. Tylecote and Dunn, and W. E. Cooke, of Wigan, described bodies somewhat resembling asbestosis bodies in the lungs of coal miners who had never been near an asbestos factory. One reason why tuberculosis was more prevalent in cases of silicosis than in cases of asbestosis was that the latter disease was much more rapidly fatal; another explanation was the insanitary habits of knife-grinders. Silicosis was a disease of males essentially, asbestosis largely a disease of females. The general hygienic conditions in asbestos factories were probably pretty good. He was interested to hear Dr. Stallybrass's opinion that silica rather than silicon was the danger. It was probably a question of solubility. Carborundum (silicon carbide) was found by E. H. Kettle to be almost inert on local inoculation. He was interested to hear of the frequency of pulmonary fibrosis among the masons engaged on the Liverpool Cathedral and the drillers and quarriers in the Mersey Tunnel.

LONDON CANCER SOCIETY

THIS society, which was recently formed, held its inaugural meeting, under the presidency of Mr. J. P. LOCKHART-MUMMERY, on Jan. 27th at 144, Harley-street, W.

Mr. T. YOUNG SIMPSON, hon. sec., and Dr. P. CAVE, hon. treas., explained that the objects of the society were to study, as far as possible, every aspect of the cancer question and to report on new methods of treatment and new pathological and surgical methods of diagnosis with a view to the discovery of some common ground of progress. They appealed strongly to the profession to attend the meetings and to bring forward any new idea, improvement in technique, or practical discovery which might suggest a new avenue of exploration or assist in alleviating or curing any form of malignant disease. There was already a feeling amongst the more sanguine members that before long cancer might be treated without some of the more serious surgical methods now in vogue and possibly by quite simple medical means.

Dr. PAUL CAVE read a paper, illustrated by radiograms, on Osteoplastic Metastases in Cases of Cancer of the Prostate.

In one of his cases a man, aged 50, with no initial symptoms of prostatic trouble, suddenly developed backache. X rays showed extensive osteoplastic deposits in the lower dorsal, lumbar, and sacral vertebræ. It was then discovered, on routine examination, that the prostate was hard and knobby. Complications developed rapidly, including incontinence of urine and fæces, paralysis and anæsthesia of both legs—all symptoms of pressure upon the spinal cord. The cervical and upper dorsal vertebræ and the skull were not affected.

Autopsy revealed a stony-hard condition of the affected vertebræ, the chemical composition of the bone showing a 44 per cent. increase in the calcium carbonate content. The marrow spaces were shown on decalcification to be filled with solid masses of epithelium. Practically no marrow remained and the extension of the growth into the spinal canal had severely compressed the cord. The growth (an adenocarcinoma) in the prostate extended into the bladder and pelvic tissues. There was no rheumatic history and the Wassermann reaction was negative. The lungs, liver, kidneys, and spleen were normal. There was no affection of skull, brain, or meninges.

Dr. Cave said that it was difficult to explain why sclerosis should develop in bone instead of osteoporosis, and why only the lower spinal vertebræ should be affected. If the sclerosis of bone was an effort of nature to strangle the growth why did it occur specially in cases of prostatic cancer and not in all cases of bone metastases. A possible explanation was: (1) spread from the primary growth through the lymphatics, whereas osteoblastic metastases follow vascular dissemination; (2) cancer cells invade the bone through the Haversian canals and lymphatic channels after the ligaments and periosteum have been infiltrated; (3) the various blood-vessels become choked with cancer cells and so the blood-supply of the parts is diminished; (4) this restricted blood-supply deprives the bone cells of parathyroid secretion, causing retention of calcium in the form of calcium carbonate; (5) the new bone encroaches on the Haversian canals and medullary spaces and makes the bone abnormally dense and hard.

Dr. MAURICE SHAW read a paper on Some Medical Aspects of Cancer. He held that it was an advantage for those who suffered from apparently innocent complaints to submit themselves to a thorough and complete medical examination from time to time in order to free themselves from the subconscious bogy of cancer. He said that often patients improved in health when a fear to which they would not give expression in words was dispersed by a definite statement excluding any form of malignant disease. He expressed his confidence that by team-work it was now possible to verify or exclude the majority of cancerous tumours, but conceded that up to the present no serum test for the presence of cancer in the system had proved efficient. In his view intrathoracic cancer, growths in the large bowel, malignant prostate, and so on, were sometimes missed, because trouble was not taken to investigate matters more thoroughly; he urged practitioners to keep abreast of the times. He believed that a society such as the London Cancer Society could do much good by hearing the views of experienced clinicians, surgeons, pathologists, and laboratory workers, from a careful sifting of which definite advances might be made.

Dr. DAVID DE SOUZA, Mr. MCNEILL LOVE, Dr. C. E. M. LOWE, Dr. S. W. H. STUART, and others took part in the ensuing discussion.

REVIEWS AND NOTICES OF BOOKS

Gray's Anatomy

Twenty-fifth edition. Edited by T. B. JOHNSTON, M.B., Ch.B., Professor of Anatomy in the Medical School of Guy's Hospital. London: Longmans, Green and Co. 1932. Pp. 1478. 42s.

IT is no surprise to learn that the last edition of this famous work was so favourably received that the present issue was called for earlier than had been anticipated. We have little doubt that the history will repeat itself. It is a real pleasure to read the descriptive accounts of bodily structure in this book. The editor has rewritten a good deal of the section on surface anatomy, and has incorporated in the embryology section many of Prof. J. E. Frazer's recently published views; otherwise the main changes have been in small revisions and in the addition and replacement of figures. It is to be hoped that Prof. Johnston's ardent wish may be fulfilled, and that the questions of terminology which have been upsetting the anatomical world for so many years will soon be settled to the satisfaction of English anatomists. The amelioration of the student's lot, in this respect, produced by the simple use of English equivalents whenever possible, is a move in the right direction which is here adopted. A fine book, commendable in every way.

The Colon, Rectum, and Anus

By FRED W. RANKIN, M.D., F.A.C.S., Associate Professor of Surgery, the Mayo Foundation; J. ARNOLD BARGEN, B.S., M.D., M.S., F.A.C.P., Assistant Professor of Medicine; and LOUIS A. BUIE, M.D., F.A.C.S., Associate Professor of Proctology at the Foundation. London: W. B. Saunders Co., Ltd. 1932. Pp. 846. 50s.

THIS authoritative work contains a historical account of the diagnosis and surgical treatment of disease of the large bowel and rectum, and incorporates a record of the clinical experience and statistical data accumulated at the Mayo Clinic. Certain sections of the book demand especial notice. The chapter on megacolon gives a complete summary of the modern view of the pathology of this condition, and an indication of the hopeful results which are being obtained by sympathectomy. The long chapter on chronic ulcerative colitis provides a masterly exposition of the subject. Bargen's diplococcus is stated to have been isolated in pure culture from approximately 80 per cent. of patients with chronic ulcerative colitis examined at the Mayo Clinic during recent years, and a similar organism has been obtained by blood culture from certain fulminating cases of the disease. It is not believed at this clinic that the dysentery bacillus plays any part in the immediate ætiology. The incidence of complications, such as stricture, malignant disease, and peritonitis, is discussed, and the treatment is described in a helpful way. A large portion of the book is naturally devoted to the subject of carcinoma of the colon and rectum. Surgical excision is considered to be the method of choice in dealing with malignant disease of the rectum; the patient's condition, together with the site and characteristics of the growth, being considered in determining the most suitable surgical procedure. A cautious attitude is adopted as to the value of radium in rectal cancer. The final chapter on operative procedures contains many features of interest, including the methods of resection of the colon with aseptic anastomosis, and Rankin's method of "obstructive resection." A two-stage abdomino-perineal excision is described, the excision operation being started from the perineum at the second stage. For the treatment of megacolon the method of exposure and division of the presacral and inferior mesenteric nerves is described.

The bibliographies given at the end of each chapter show what an immense amount of original research has been done in this branch of surgery at the Mayo Clinic. The volume forms an impressive and valuable monument to the work of the authors and their colleagues, as well as a critical and up-to-date book of reference on the colon and rectum. It should be widely studied.

The Principles and Practice of Psychiatry

By ALEXANDER CANNON, M.D., and EDWARD DUNCAN HAYES, M.D. London: William Heinemann, Ltd. 1932. Pp. 437. 25s.

THIS work is an attempt to write a compendium of modern psychiatry for the use of students. While the divisions and proportion of the work are on the whole adequate, the same cannot be said of the subject matter which is presented in an undigested and fragmentary form. At places, owing to the lecture-note style, the statements are incoherent, or, by omission of relevant data, misleading. After an introductory chapter on general principles the forensic and criminal aspects of psychiatry are considered, followed by sections on mental deficiency and abnormalities of behaviour in children. Psychology is the subject of the next three chapters; then systematic psychiatry is dealt with, especial attention being given to the endocrine glands in this connexion. The application of physiology to psychology and of biochemistry to psychiatry are discussed at some length, and a chapter on methods of examination concludes the book, except for an appendix which is a medley of tables of doses, psycho-analytical symbols, anatomical diagrams, classification lists, and legal forms and other odds and ends, including the deaf and dumb alphabet. The production, for a text-book, is too uncritical and subjective; this is particularly evident in the section on psychotherapy. The book seems to be compounded of facts collected without due sifting from many sources, and of personal views which require more support before inclusion in a text-book for students.

The Failing Heart of Middle Life

By ALBERT S. HYMAN, A.B., M.D., F.A.C.P., Cardiologist, Beth David and Manhattan General Hospitals; and AARON E. PARSONNET, M.D., C.M., F.A.C.P., Attending Physician and Cardiologist, Newark Beth Israel Hospital. Philadelphia: F. A. Davis Company. 1932. Pp. 538. $5.00.

UNDER an attractive title Dr. Hyman and Dr. Parsonnet deal in great detail with the various types of heart disease which result from lesions of the coronary arteries. The first six chapters are devoted to an anatomical, physiological, and pathological introduction to the subject, and the next five to the syndrome of "myocardosis," this term being applied, instead of the more familiar title of myocardial degeneration, in lesions other than the inflammatory ones resulting from myocarditis. Three sections of the book are devoted to coronary occlusion, to the electrocardiographic changes in coronary disease, and to angina pectoris; while in a final section the authors deal with medico-legal problems arising in cases of sudden death.

The importance of the great degenerative group of cardiac lesions needs no emphasis, for the advances in our knowledge of the clinical manifestations of coronary occlusion in the last 20 years only serve to emphasise the extent of our ignorance concerning other types of angina. As a book of reference this will be welcomed by all who are trying to explore this field; but at the same time one cannot but regret that the authors have in places lost sight of their objective. While the chapters dealing with pathology are to the point and are well illustrated by microphotographs, those on the clinical aspect are at times unnecessarily veribose and treat in great detail topics which should already be familiar to all readers whose clinical training is not entirely negligible. Similarly in the section on electrocardiography six chapters are devoted to disturbances of the heart's rhythm. While it is recognised that almost every type of abnormal electrocardiogram may be met with in the degenerative group of cardiac diseases, this is surely not the place to discuss the symptomatology and diagnostic features of the various types of arrhythmia. The reader who is prepared to plod through a book of over 500 pages on coronary arterial disease deserves to be given credit for at least an elementary knowledge of electrocardiography. In a future edition much padding might with advantage be omitted. A minor point is that the lettering of the electrocardiograms is not that commonly adopted, the initial major ventricular deflexion being marked R irrespective of whether it happens to be positive or negative. The medico-legal section is a useful innovation, but would be easier to digest if more space were devoted to a discussion of the legal principles involved even if fewer actual cases were quoted to illustrate these principles. The bibliography includes 1250 references but even so appears to be incomplete, several original papers which are referred to in the text being omitted.

Journal of Pathology and Bacteriology

THE January issue (Vol. XXXVI., No. 1) contains the following papers. Familial and Bilateral Tumours of the Carotid Body, by W. H. Chase (Montreal). Two sisters with tumours of the carotid body, in one of them on both sides. They were removed and one of the women died. The tumours had the typical structure of the carotid body; there were no metastases and no general symptoms were identified.—On the Significance of Nerve-fibres in Human Malignant Neoplasms, by G. M. Ryrie (Glasgow). The nerve-fibres found in carcinomata are not proper to the tumour, but axis cylinders sprouting from the normal nerves injured by the tumour as they do from after any nerve section.—Experimental Liver Disease Produced by X Ray Irradiation of the Exposed Organ, by A. Bolliger and K. Inglis (comment on p. 258).—The Pathological Action of Light: "Light Stroke" and its Relation to "Heat Stroke," by A. G. Levy (London). Mice, sensitised with hæmatoporphyrin and exposed to visible light, die with symptoms very similar to those of heat stroke. Intense irradiation with ultra-violet light does not kill depilated mice if they are kept cool.—Neoplasms in Fish: a Report of Six Cases with a Summary of the Literature, by A. Haddow and I. Blake (Edinburgh). Lymphosarcoma, hepatoma, ganglioneuroma, melanoma, &c.—The Filtration of Herpes Virus through Graded Collodion Membranes, by W. J. Elford, J. R. Perdrau, and W. Smith (London). The diameter of the virus particles is about 0·1 to 0·15 μ.—The Production of Immunity to Vaccinia Virus by Mixtures of Immune Serum and Virus, and the Importance of Phagocytosis in Antivaccinial Immunity, by R. W. Fairbrother (Manchester). Intracerebral inoculation of virus serum mixtures leads to a high degree of immunity; immune blood has more action on the virus than immune serum.—Observations on Salmonella Agglutination and Related Phenomena, by P. Bruce White (London). For experts by an expert.—Species Immunity to Pneumococcus, by H. B. Day (London). In mature pneumococci an antigen is formed which on injection into animals induces immunity to all types of pneumococci; the serum confers a similar passive immunity. The type-specific antigens are formed by young pneumococci, and the more generalised species antigen appears to be derived from them by dissociation of the type-specific substance.—The Production of Staphylococcal Hæmolysin with Observations on its Mode of Action, by J. W. Bigger (Dublin). The production of hæmolysin is inconstant and the best conditions vary with different strains; glycerin and phosphate are useful.—Reticulo-endotheliomatosis, Ovarian Endothelioma and Monocytic (Histiocytic) Leukæmia, by R. Gittins and J. C. Hawksley (Birmingham). In an infant of one year, with a good discussion of the literature.—Sarcosporidiasis in Human Cardiac Muscle, by J. A. Hewitt (London). Accidentally found in histological material.—Production of Tumours in the Fowl by Carcinogenic Agents: (1) Tar, (2) Dibenzanthracene, by P. R. Peacock (Glasgow). Both agents produce tumours on subcutaneous injection, varying from fibromata to highly malignant sarcomata.—Pulmonary Tuberculosis with the Bovine Type of Bacillus in the Sputum: Fourteen New English Cases, by W. M. Cumming, W. M. Foster, R. O. Girdwood, and A. S. Griffith (Grassington, Bradford, and Cambridge). Ten showed evidence of previous glandular involvement. Two autopsies showed no clear difference from cases due to the human bacillus. From one case bacilli of both types were isolated.—Incidence and Correlation with Clinical Severity of "Gravis," "Mitis," and Intermediate Types of Diphtheria Bacillus in a Series of 500 Cases at Leeds, by J. S. Anderson, K. E. Cooper, F. C. Happold, and J. W. McLeod (Leeds). The differentiation previously announced is held to be confirmed: in 425 gravis cases there were 78 examples of paralysis and 50 deaths; in 113 mitis cases, 2 cases of paralysis and no deaths. The distinction between the two in animal experimentation is not so clear.—A Case of Circumscribed Lymphangeiomatous Dilatation of the Lingual Papillæ, by S. McDonald, Junr. (Newcastle). In a boy of 5.—A Method of Staining the Elementary (Paschen) Bodies of Vaccinia, by J. Craigie (Toronto). Mercurochrome, methylene-blue, and methylene azure.—The Influence of Purified Testicular Extract upon the Rate of Absorption of Antitoxin, by D. McClear and W. T. J. Morgan (Elstree). The extract accelerates the passage of antitoxin into the blood after subcutaneous but not after intramuscular injection.—Conditions Predisposing to Urinary Infection after Post-operative Retention, by C. E. Dukes (London). The longer there is any stagnant urine in the bladder, the more likely it is that the few organisms which are always present will be able to gain an infecting foothold.—Phases in the Growth of the "Virus" of Pleuropneumonia on Artificial Media, by J. C. G. Ledingham (London). Minute spores give rise to a delicate mycelium on which fruiting bodies develop from which a variety of bizarre forms arise; subsequently involution sets in and the spores alone remain to start a fresh cycle.

MEMORIAL TO THE MAYORESS OF TORQUAY.—It is proposed to provide an X ray apparatus and an operating table at Whitecliffe Tuberculosis Hospital as a memorial to Mrs. Thomas, the mayoress of Torquay, who was recently killed in a motoring accident.

THE LANCET

LONDON: SATURDAY, FEBRUARY 4, 1933

THE EPIDEMIOLOGY OF WHOOPING-COUGH

IN a paper[1] already reviewed in these columns, Dr. PERCY STOCKS brought out the fact—still too little appreciated—that whooping-cough is now one of the major causes of death in early childhood. In the sequel concluded on p. 265 he shows that in London it must indeed be regarded as the most expensive epidemic disease among children—that is, when the cost is measured in terms of loss of life, acuteness of physical suffering, permanent damage to respiratory, cardiac, or nervous mechanism, and loss of school attendance. Probably the tendency to under-rate its importance, that is yet apparent in the lay and medical mind, is a relic of the latter half of the nineteenth century when its contribution to mortality was overshadowed by those of scarlet fever and diphtheria, both of which caused many more deaths then than they do now. It is partly this attitude to the disease, partly its relative neglect by research workers, that have, no doubt, led to our somewhat scanty knowledge of it and of its control. For instance, in the present state of knowledge Dr. STOCKS believes that the practice of excluding from already infected schools home contacts to whooping-cough cases may actually be harmful. The risk lies in these excluded children spending their time playing with children of pre-school age, for it is on these latter that the mortality falls heaviest. Of the 44,000 deaths in England and Wales attributed to whooping-cough during 1921–30, 97 per cent. were of children under five years of age, while according to Dr. STOCKS's figures for the borough of Battersea the fatality-rate fell from 4 per 100 cases at age 0–1 to 0·2 per 100 at ages 5–10. If exclusion from school is to be of benefit it must be accompanied by effective isolation from younger children, a difficult thing to achieve in poor and overcrowded areas. The contention that "it is best to get it over while they are young" has no justification; for besides the rapid diminution in fatality-rate there is a reasonable chance, of the order of two in five, Dr. STOCKS calculates, that if a child escapes immediate attack he or she may escape the disease altogether.

One of the peculiarities of the epidemiology of whooping-cough that has long been observed is its heavier incidence of mortality upon the female sex. It is the only important cause of death below the age of five years that reveals this peculiarity. Respiratory causes of death, such as tuberculosis, pneumonia, and bronchitis, all show a lower death-rate among girls—15 to 20 per cent. lower than among boys. In measles, scarlet fever, and diphtheria, girls show a slight advantage, about 5 per cent.; yet from whooping-cough they show an extremely consistent disadvantage, their death-rate at ages under five being 20 to 25 per cent. in excess of boys'. From time to time various explanations of this paradox have been advanced—e.g., sexual differences in the formation and development of the larynx, differences in sensitiveness of the nervous system—but no one of them seems adequate to fit the observed facts at different ages. Owing to lack of efficient notification it is not even clear whether this higher mortality-rate denotes a higher incidence of attack amongst females or a higher fatality-rate amongst the attacked (or a conjunction of both). According to the figures which Dr. STOCKS gives for London boroughs there is a significantly greater susceptibility of female infants to attack from birth, and this increases from the fourth year onwards to a 50 per cent. excess by the tenth year. He has no figures to show whether they succumb more easily to attack, but finds in Greenwich that this female susceptibility bears some relation to season. At ages under seven there was in this borough no excess of girls amongst cases commencing from October to January, but an excess of about 20 per cent. amongst cases arising during the other months.

Another curious point brought out by these figures is that the proportions of children known to their parents to have had whooping-cough before entry to school at ages 3, 4, 5, and 6 are greater in those boroughs of London where the population is less dense and better housed. Though, obviously, this may be partly accounted for by more accurate observation and diagnosis in such areas, Dr. STOCKS believes this factor is insufficient explanation, and that increased crowding of the population in the different districts of London not only does not result in increased incidence of whooping-cough but rather the reverse. He believes that the phenomenon can only be explained in terms of latent immunisation. A possibly related phenomenon has been repeatedly drawn attention to by the Registrar-General of England and Wales in his recent annual reports. In this country the mortality from whooping-cough is invariably lower in the rural districts, and yet with decreasing urbanisation a higher proportion of the deaths fall in the first year of life. For instance, in 1930, of the whooping-cough deaths at all ages in rural districts 53 per cent. were of infants under one year old; in the county boroughs the percentage was only 46. In many years still larger differences are to be found, and the characteristic can be observed at least three-quarters of a century ago, when the death-rate from whooping-cough was three times as high. Measles, on the other hand, shows rather what would be expected—the more the overcrowding the earlier the chance of attack and death. Without more knowledge of the case-incidence of the disease in various areas—to which the present study materially contributes—it seems impossible to explain this further curiosity of a disease still epidemiologically obscure.

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[1] Jour. of Hyg., 1932, xxxii., 581; see THE LANCET, 1932, ii., 1115.

THE REPAIR OF LIVER INJURY

No organ in the body is more competent than the liver to restore itself to normal by reparative and compensatory growth after certain types of injury. Complete removal of one lobe is followed quickly by compensatory hypertrophy of the remaining parts, and in this way a loss of as much as two-thirds can be made good. Similarly the atrophy produced by tying a part of the portal vein is balanced quantitatively by overgrowth of the healthy parts. When, too, the central part of each lobule throughout the whole liver is destroyed, as in chloroform poisoning, regeneration soon reproduces a normal liver, and this takes place even in starving or ill-fed animals in which the necessary materials for reconstruction are drawn from other tissues rather than from the food.

In all these instances, restoration appears to be perfect, permanent, and functionally quite adequate. But there are other types of injury which seem to be more than the liver can deal with at present, though we may suppose that under the sifting influence of evolution it may some time acquire the faculty of coping with these also. A good example is given by Dr. A. BOLLIGER and Dr. K. INGLIS [1] of Sydney, who have studied the action of X rays on the liver. A single massive dose applied to the exposed organ causes a varying amount of acute necrosis of the liver cells, mostly towards the surface but to some extent also in the depths. This may have a lobular distribution, in which case as usual the central cells are most vulnerable, or it may be massive—i.e., without any reference to lobules. If it is extensive enough, the animals die. If they survive the immediate damage, the dogs seem quite well, and biopsies may show little anatomical change. But sooner or later—5 to 16 months in the experiments described—the animals begin to wilt, lose weight, develop jaundice and ascites, and die with the rather vague symptoms of cholæmia. After death the liver is small and irregularly cirrhotic, with perhaps some areas of indefinite hypertrophy: microscopically there is much overgrowth of connective tissue and disappearance of liver cells, and, in addition, areas of recent necrosis are also generally found. The injury inflicted by X rays is evidently one from which satisfactory recovery is difficult or impossible. The anatomy, histology, and clinical history are reminiscent of the condition in man often called "subacute atrophy," many cases of which have been due to poisoning with trinitrotoluene or organic arsenicals. In this the liver cells have certainly not lost their capacity for responsive growth, for nodular masses of hypertrophy are part of the characteristic picture. But hypertrophy or regeneration which will be functionally adequate seems to be, often at least, impossible, and after a long illness the patient dies of liver insufficiency.

Much the same difficulty arises in trying to explain exactly what happens in ordinary cirrhosis. Often enough the individual lobules are considerably hypertrophied, and larger masses of fresh-grown liver cells are frequently present, yet the disease goes on to an inevitably fatal end. What is the essential difference between chloroform necrosis, which cures itself, and these other forms, which do not? It seems as if it must depend not so much on the destruction of the liver cells themselves, but on the involvement of the framework in which they live, and especially perhaps of the finer details of the complicated blood-supply. In the portal canals the hepatic artery breaks up into capillaries which reunite into venules which join the portal venules to enter the sinusoids at the periphery of the lobules. What this arrangement means functionally we do not yet know. Pathologists, too, have many reasons for thinking that the several concentric zones into which the cells of a lobule may be divided probably have different functions, the due discharge of which may well depend on each of them receiving the right sort of blood. This presumptive guess that the important error in X ray necrosis, in T.N.T. poisoning, and in cirrhosis, is a disorganisation of the blood-supply is borne out by the work of A. H. MCINDOE,[2] who showed, by some beautiful injections, how the normal arrangement is completely upset in ordinary cirrhosis with the result that the liver cells receive relatively little of the portal supply. Incidentally, the facts make it difficult to believe that cirrhosis begins with any necrosis which is strictly lobular in distribution.

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BIRTH CONTROL METHODS AND RESULTS

IN this country the birth control movement has now passed out of the crusading phase into the phase in which it has become self-critical and analytical. One of the first signs of this new attitude was the appearance in 1930 of Mrs. SECOR FLORENCE'S "Birth Control on Trial,"[3] in which were summarised the results of a follow-up investigation conducted by her upon the first 300 women who attended the birth control centre in Cambridge. A similar critical attitude characterises the successive publications of the International Medical Group for the Investigation of Contraception which have been reviewed from time to time in these columns. ENID CHARLES [4] has now provided a valuable addition to this class of literature.

It is by no means easy to form an impartial estimate of the results of the practice of contraception. Hitherto practically all the published findings have been based upon the records of birth control clinics—that is to say, of special centres, for the most part organised and financed as private enterprises, by groups of interested persons throughout the country. These findings are open to the criticism that they are based upon the experiences of a selected group of women. A woman may attend a birth control clinic for several reasons, among them because a method previously employed has failed. The clientèle of the clinics cannot be taken as representing unselected examples of married women in the community. In order to meet this criticism, the statistics subcommittee of the Birth Control Investigation Committee drew up, four years ago, a questionnaire which was sent out to women who, so far as possible, were unselected and therefore represented a random sample of the population. It was filled in by the women themselves who were asked not to reveal their names. The material thus furnished provided evidence of a different nature from that yielded by the records of the birth control centres which are compiled by the lay workers and doctors attached to the centres. The questionnaire sought to obtain unbiased answers on the extent to which birth control methods are used in the community, and on the reliability, practicability, effects on health and effects on fertility of different methods. Unfortunately it proved difficult to secure the coöperation of women of the working classes, and the questionnaires were for the most part filled in by women falling in Group I. of the Registrar-General's report of the 1911 census. The greater part of Enid Charles's book is devoted to an analysis of these questionnaires. It also contains analyses of 198 questionnaires sent out by a nurse to women upon whom, in the years since the war, she had fitted Dutch pessaries, and of 400 follow-up reports carried out by the Birmingham Women's Welfare Centre. The volume therefore contains an abundance of statistical material, and, by reason of the fact that the generalisations it contains are based upon first-hand information, stands out from a mass of propagandist literature founded on little else than moral preconceptions and biased impressions. Though it cannot be claimed that any of the three sources of material represents a random sample of the population, they furnish, when taken together, a valuable body of evidence from which it will only be possible to summarise here the salient facts of medical interest.

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[1] Jour. Path. and Bact., January, 1933, p. 19.

[2] Archives of Pathology, 1928, v., 23.

[3] See THE LANCET, 1930, i., 919.

[4] The Practice of Birth Control. By Enid Charles, M.A., Ph.D. London: Williams and Norgate, Ltd. 1932. Pp. 190. 10s. 6d.

Of 432 women, then, who vouchsafed their experiences, only 12 had employed no contraceptive methods whatever. It will thus be clear that in the group investigated, in which the active reproductive life averaged 12 years, birth control methods of one sort or another are very extensively used. Enid Charles concludes that the sheath and the rubber cap are the most reliable methods, provided that they are used in conjunction with a spermicide or a douche. In these circumstances, assuming that coitus takes place about once a week, the odds against a single conception occurring over a period of about five years are about 17 to 1; and the odds against conception following a single intercourse are about 5000 to 1. Of the two methods above referred to, the combination of a sheath and another method gives the highest degree of reliability, the Investigation Committee's questionnaires here showing a percentage of success of 98 comparing with one of about 75 for the rubber cap combination. A soluble quinine pessary, when used alone, was found to be relatively unreliable, the percentage of success being only 54. The rubber cap combination seems to be somewhat more acceptable on æsthetic grounds than the sheath, which is disliked by a number of the husbands. A question upon the effects of the use of birth control on health and conjugal well-being was answered by 339 women. Of these, 2 found contraceptive methods so objectionable that they were given up, 37 found them unsatisfactory but inevitable, 193 found them in general terms satisfactory, and 107 spoke of them as essential to health and marital happiness: but there was evidence that coitus interruptus was found harmful by many couples who, at one time or another, had recourse to this method. The Investigation Committee's questionnaires also provided evidence on the effects of contraception on fertility. In a series of 420 women desiring pregnancy there were only 17 who were unable to conceive. Allowing for the fact that the sample may be selected as regards absence of sterility, this figure compares favourably with the amount of involuntary sterility which has been computed to exist in the general community, wherein one-sixth of all marriages are thought to be sterile. But Enid Charles adduces evidence that despite its unreliability as a contraceptive, quinine may have an effect on fertility in that, for users of pessaries containing this substance, the period intervening between the discontinuation of use and the moment of conception seems to be unduly prolonged. These are but a few of the findings set forth in this book which should be read by all persons seriously interested in the sociological and clinical aspects of contraception. She has analysed and summarised the complicated material placed in her hands with deftness and lucidity; and the caution with which she advances her conclusions should be an example to all writers upon the subject.

Several of these conclusions are borne out by the annual report for 1931–32 of the Society for the Provision of Birth Control Clinics.[5] Of 97 women who discontinued practising birth control because they wanted a child, 96 became pregnant; and 158 women who, on one occasion, neglected to use the method advised, had unwanted pregnancies. The report further confirms Enid Charles's findings about the frequency with which coitus interruptus is practised by working-class couples, and also about its unreliability. The medical officers of the Walworth women's welfare centre also draw attention to the frequency with which prolonged lactation fails as a contraceptive measure. The method most frequently advised at this centre is a combination of Dutch pessary, a spermicidal ointment, and a douche of soapy water. A case is mentioned of a woman who used the same pessary and syringe for five years. An increasing number of couples are successfully using the sheath. A list of the 17 subsidiary clinics affiliated to the society is available to practitioners. At these clinics up to August 31st, 1932, advice has been given to 47,500 women. Printed leaflets showing the places where centres affiliated to the society have been established, and the times at which sessions are held at these centres, are available on demand.

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[5] Obtainable from the Secretary, 153A, East-street, Walworth-road, London, S.E.17.

ANNOTATIONS

EARLY DIAGNOSIS OF MALIGNANT DISEASE

LESS than a year ago[1] we chronicled the formation of the Harley Medical Society, which originated in a desire to foster the scientific spirit among members of the medical group attached to the London Clinic and Nursing Home. Mr. Lockhart-Mummery gave the opening address entitled the Origin of Tumours. We have now received (see p. 254) a report of the inauguration of yet another more specialised society, the London Cancer Society, which first met last week, under the presidency of Mr. Lockhart-Mummery, at 144, Harley-street. It seems doubtful whether the multiplication of more societies in an area already well served by the different sections of the Royal Society of Medicine and by the Medical Society of London will really lead to the advances in knowledge anticipated by some of its members. The proposition put forward at the meeting was that, as regards diagnosis at any rate, knowledge had reached the stage where, if the public would only consent to submit to periodical examination, and all available accessory methods of diagnosis were enlisted, very few malignant growths would remain undetected at an early stage. If we cannot share this optimism it is perhaps a matter of definition. Evidently "an early stage" is considered to be a stage at which the growth though visible or palpable is still operable and no metastases have developed. But every practitioner could reveal tragic stories of cases where vigilance has failed to detect the beginning of malignancy. In fact, except by accident, for example during the routine microscopical investigation of a uterus or a breast removed for another reason, it is probable that really early lesions are never detected. By the time they are palpable or visible by X rays or to the naked eye, they may well, in certain regions, be inoperable. And in the intervals between any routine periodical examinations—which, to be in any degree reliable, must include examination per vaginam and per rectum—a quickly growing tumour may defeat the whole elaborate scheme. Whether the number of growths detected in this way is likely to be worth the risk of developing in healthy persons morbid fears of disease, or of increasing such fears in those who already suffer from them, is a matter of opinion. Mr. Lionel Colledge, in the current issue of the *Practitioner*, which is devoted to articles on the early diagnosis of malignant diseases, says wisely that "it is the doctor, and not the patient who should be the cancerphobe." It is the doctor, too, who will get some surprises from a study of these 14 articles on diagnostic possibilities in cancer of the tongue, the stomach, the throat, the mediastinum, lung, and pleura, the colon, the rectum, the breast, the uterus, bone, the bladder, the prostate, and the testicle. For example, while Mr. Geoffrey Keynes admits that early cancer of the breast is not easy to diagnose, Dr. Izod Bennett boldly declares in connexion with the early diagnosis of carcinoma of the stomach, that "in any particular individual the question of whether or not cancer of the stomach is present can be answered accurately in 99 out of every 100 cases." Obviously the definition of "early" as used by different observers can bear no firm relation to ultimate results of treatment, since the prognosis in breast cancer is immeasurably better than in cancer of the stomach. The omission from the series of the brain and the kidney regions, where diagnosis is especially difficult, is regrettable. The articles are all provocative. Sir Holburt Waring contributes a general introduction in which he outlines the methods of examination available and utters some useful warnings. The conclusion is inevitable from the careful study of these articles that in spite of the many instruments and direct and indirect methods of examination now available, the early diagnosis of malignant diseases is still often very difficult.

YELLOW FEVER IN FRENCH WEST AFRICA

IN the English territories of Nigeria yellow fever is endemic in the coastal regions. This endemicity decreases as one proceeds into the interior, and in the southern zone the disease can only be recognised in its epidemic form. This knowledge is the outcome of studies carried out at Lagos, under the auspices of the Rockefeller Foundation of New York, by the West African Yellow Fever Commission, whose director, Dr. Beeuwkes, has since been pursuing his investigations further north in the French territory by permission of the Governor-General. His object was to try to discover any manifestations there of yellow fever, and to ascertain the most northerly limit of this terrible disease. Dr. Beeuwkes has had the collaboration of Dr. C. Durieux, who joined the members of the Commission in Lagos in April last, and now describes the work undertaken and in progress.[1] The members of the Commission detailed to undertake the expedition included Dr. Mahaffy as leader, Mr. Michailoff as secretary, and various native personnel. They left Lagos on April 11th by rail for Kano, whence further journeys were undertaken by motor-car. On April 14th they reached Zinder, and passed through various townships of the French Niger Colony, the French Sudan, and Dahomey. During the journey 803 specimens of blood were taken in different localities. Wherever possible the data were derived from natives born and bred in the neighbourhood. The determination of the exact district to which different natives of Nigeria belong is extremely difficult on account of the shifting nature of the population; specimens were obtained from women by preference, as they seemed less mobile than the men. The specimens obtained were tested according to the method of sero-protection used by the American Yellow Fever Commission at Lagos. Sawyer's method of sero-protection is the one favoured; a starchy emulsion is first injected into the brain of a white mouse, and two hours afterwards a mixture of serum-virus is injected into the peritoneal cavity. Each serum is injected into six mice, and the different operations are carried out as speedily as possible; 25–30 sera are tried out every three days, and about 300 sera a month are thus tested. The white mouse apparently is the ideal animal for testing susceptibility to the yellow fever virus; up to the present no less than 2000 sera from all parts of Nigeria have been tested. The results of the tests carried out with the specimens of blood collected on the tour of the French territories did not favour the general opinion that the French Niger Province has been free from yellow fever up to recent times. These tests indicated that the disease has existed for several years in the population of this colony. In the Zinder region, the last manifestations of yellow fever appear to have been between the years 1915 and 1919 (the youngest of the positive cases were about 17 years old). At present the disease is localised in the southern zone of the colony on the road from Gouré to Niamey, and it has not yet spread northwards. Dr. Durieux expresses the hope that these investigations will be pursued in order to define the areas where yellow fever is endemic, so that prophylactic measures can be undertaken, and the areas as yet free from the disease protected from invasion.

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[1] THE LANCET, 1932, i., 619.

[1] Annales de l'Institut Pasteur. December, 1932, p. 735.

SEX HORMONES AND UTERINE INFECTION

It is well known that the reticulo-endothelial system plays an important part in resistance against infection, and a fair amount of evidence has accumulated to show that any factor which stimulates the local reaction of reticulo-endothelial cells is of importance in combating a local infection. The reaction of the reticulo-endothelial system in cases of puerperal sepsis was investigated some years ago by Louros, who pointed out that the utility of such methods of treatment as the injection of foreign proteins, of colloidal substances, and of milk probably depends on their stimulating the reticulo-endothelial system. C. F. Fluhmann [1] has lately described experiments on the rabbit uterus which were designed to show the local response of reticulo-endothelial cells to the injection of ovarian and pituitary hormones. The usual technique of injecting trypan-blue was employed, and the test animals were spayed rabbits and rabbits under the influence of œstrin and of pituitary hormones. The local response in the uterus was either one of œstral or progestational hypertrophy. The results obtained showed that either under the influence of œstrin or when in a state of progestational proliferation the uterus contained a large number of macrophages, and it was found that if local injury to the uterus was previously induced by inserting a silk ligature into one of the uterine horns the macrophage response was tremendously increased. Fluhmann tries to make out a case for treating puerperal sepsis and pelvic inflammations by the administration of the various ovarian and pituitary hormones. It is, however, fairly clear that the work is only preliminary, and it is quite likely that other interpretations may be given to his results.

RECENT WORK IN HÆMATOLOGY

The method adopted throughout the most recent volume [2] of the Practical Medicine series devoted to General Medicine is to abstract the literature of the last 18 months dealing with each subject discussed. The abstracts are clearly presented, but little attempt at criticism is made, nor is a complete picture of any disease or its treatment given. While this method has obvious disadvantages from the point of view of the student, it results in an extremely valuable book of reference for workers in specialised fields, since papers from less well-known journals in many languages are included in the survey. In the section on diseases of the blood, which has acquired much clinical importance in the period under review, Dr. George R. Minot and Dr. W. B. Castle cover the whole field of hæmatology. The papers included deal, as the editors say, "with fundamental physiological questions or techniques of importance in normal and pathological conditions of the blood." The treatment of polycythæmia vera with potassium arsenate is discussed. Cases which have been followed for several years, and unsuccessfully treated with both phenylhydrazine and X rays over the long bones, have shown prompt clinical and hæmatological improvement on administration of potassium arsenate. Remissions have been maintained by continuous treatment, and no untoward effects are recorded. Attention is drawn to the striking clinical parallelism which exists between exophthalmic goitre and chronic lymphatic leukæmia. It is suggested that the beneficial result of treatment with Lugol's iodine in both conditions is due to its action on the sympathetic nervous system. An explanation of the failure of complete gastrectomy in dogs to produce the blood picture of pernicious anæmia is discussed. It has recently been shown by clinical trial that the dog's stomach normally lacks Castle's intrinsic factor. Therefore removal of the stomach produces no deficiency of this factor, and the blood picture of pernicious anæmia, due to such a deficiency in man, does not result. Experiments are described which suggest that human liver acts as a storage for the principle effective in pernicious anæmia. Comparison of the effect of an extract prepared from the liver of a patient with pernicious anæmia who died without treatment, with that of an extract from the liver of a patient dying during a remission, showed the latter to be potent while the former was inactive. The full indices of authors quoted and of subject matter will be appreciated by the research worker in this rapidly growing subject.

PREVENTION OF NERVOUS DISORDER IN CHILDHOOD

Conditions of modern civilisation have made the "nervous child" a figure unfortunately only too familiar. Although it is difficult to estimate with any degree of accuracy the incidence of what has variously been called nervous disorder, nervous instability, or neurosis in any age-group, there is little doubt that it has increased in the last 30 or 40 years, particularly in children of school age. The proceedings of the regular winter conference of educational associations (some sessions of which were reported in The Lancet of Jan. 14th, p. 102) are sufficient testimony to this increase. Many of the operative factors are beyond medical control. The perpetual noise and speed of modern traffic, the increasing number of "one-child" marriages, and the economic difficulties of providing the town child with adequate outdoor playgrounds, are examples. Other environmental factors can be modified by a more enlightened system of education in the home and school. The prevention of nervous disorder in childhood formed a main subject of discussion at the second meeting, held in Geneva last September, of the *Association Internationale de Pédiatrie Préventive.* Whatever part heredity, innate disposition, or so-called organic disease may play in the individual case, it was generally conceded that environment and education will always influence the condition either for good or for bad. There is in fact no such things as a pure endogenous or pure exogenous neurosis. Attention was directed almost exclusively to a consideration of the extrinsic influences brought to bear on the individual child. Prof. F. Hamburger emphasised the importance of an artificial manner of life in the production of neurosis; not only is the child liable to receive inadequate exercise, inadequate exposure to light and air, and an unnatural dietary, but the modern parent is prone to focus a quite unnatural degree of attention on such activities as feeding, excretion, and cleanliness. Fussiness over functions which should normally be largely automatic can only serve to produce a state of unrest in the child's mind, and may result in the very symptoms it is desired to avoid—anorexia, constipation, enuresis. The first essentials of the parents' attitude should be kindness and consistency, with willingness to let the child learn as far as possible from his own experience without unnecessary interference. Several speakers considered the importance of place in family in influencing development; it was pointed out that while a first child may find it intensely wounding to be superseded by a new baby, the psychological trauma is ultimately far less damaging than retaining the position of only child indefinitely. Dr. Heinrich Keller, in a recent study, has similarly observed[1] that the nervous child in Vienna is frequently an only child, and is characterised by an unsocial rather than an antisocial attitude to his contemporaries —lack of desire to make friends from a feeling of superiority. He gives as an example the reply of a 10-year-old boy, the only son of a widow, when asked if he had many friends in the school: "Nein. Ich bin doch ein feines Kind and das sind lauter so Buben!"

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[1] Amer. Jour. Obst. and Gyn., 1932, xxiv., 654.

[2] General Medicine. Practical Medicine Series, 1932. Edited by George W. Weaver, M.D., Lawrason Brown, M.D., George R. Minot, M.D., William B. Castle, M.D., William D. Stroud, M.D., Ralph C. Brown, M.D. Chicago: The Year Book Publishers. Series 1932. Pp. 837. $3.

In England a subcommittee of the National Council for Mental Hygiene, under the chairmanship of Dr. H. Crichton Miller, recently attempted to state[2] approximately the demand made upon children of various ages, and to indicate the nature of the individual response, the material for the study being obtained from the answers to a questionnaire issued to the heads of 39 schools of all types, with a total attendance of over 10,000 children between the ages of 2 and 18 years. Whilst an investigation of this kind should prove an invaluable preliminary to the removal of any unnecessary stress upon the growing child, it is clear that much of the anxiety and strain of school life is directly traceable to the economic pressure which demands examination qualifications, regardless of the best interests of physical and mental health. Under the present examination system a time factor is introduced and a definite result (which may be of great importance to the child's after-life) is often required by a certain date; the backward child is pushed beyond his capacity, and the precocious child urged to further efforts. Even in schools which pride themselves on scholars taking examinations in their stride, it is pointed out that the length of the stride may be profoundly modified. The two periods which appear to be associated with a maximum of nervous instability and a maximum of punishment—namely, puberty (13–14) and during adolescence (16–17)—are both preceded by a period of working for examinations. Crowding of the time-table also tends to result either in physical education being neglected, or (in schools where games are taken with great seriousness) in rest-periods being quite inadequate. Emphasis is laid on the value and importance of a period of rest in the horizontal position for examination candidates as much as for younger children, though the time devoted to this each day was practically nil in all the time-tables of the 14–18-year-old groups. Indeed, although State infant schools (2–8 years) are the best provided in this respect, in the primary (8–14) group no such provision is made in any of the schools under consideration. For adolescent girls there is a convention which permits intermittent relaxation at school; for boys there is none. The effects of prolonged fatigue upon nervous stability, the report remarks, cannot but be harmful. The report also draws attention to the value of training in accurate movement and performance in inducing nervous stability, and the need not only for the inclusion of handicrafts and gymnastics in the time-table, but for properly trained teachers in charge of these subjects. The report concludes with the suggestion that further research might profitably be directed towards the following problems of school life: size of classes, the number of staff teaching any one child, the hours of sleep and daily rest, recording of height and weight, study of movement as an index of vitality, creative effort, examinations, terminal strains (especially about the eighth week), and punishments.

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[1] Wien. Klin. Woch., 1932, xlv., 1180.

[2] School Life and Nervous Instability. With a foreword by Sir Maurice Craig. Nat. Council for Mental Hygiene. See THE LANCET, 1932, ii., 354.

ANÆSTHESIA IN ANIMALS

ALTHOUGH there are as yet no acknowledged specialists in anæsthesia for veterinary work, yet the knowledge of the science and the technique of administration for animals do not lag behind those employed with human patients. Naturally there are differences in degree and this became particularly evident in Prof. Wright's account of nembutal narcosis in the dog and cat in the course of the discussion at the section of comparative medicine of the Royal Society of Medicine on Jan. 25th. The veterinary surgeon uses nembutal in doses and for a purpose which are not, as Dr. I. W. Magill showed, desirable in the human subject. Nembutal appears to be a good and safe anæsthetic for the lower animals. For human beings its use is mostly restricted to that of an excellent paver of the way for true anæsthesia. One speaker related a case illustrating the extraordinary capacity of dogs to withstand the action of this drug. A dog of 20 lb. in weight received, for lethal purposes, 10 capsules of grs. 1½ nembutal. Next morning the dog was still comfortably alive, although with most reflexes in abeyance, and prussic acid had to be employed to ensure death. The usual dose of nembutal employed for animals appears to be up to gr. ¼ per lb. of body-weight and the results highly satisfactory, no additional anæsthetic being required in many instances. Two papers dealt with epidural analgesia and with anæsthesia for thoracic operations. With regard to the former, opinion was expressed that the method was invaluable for cattle and not sufficiently employed in this country.

Mr. L. O'Shaughnessy, who gave an admirable account of the subject, recommended positive pressure anæsthesia by means of a mask for operations within the chest. He demonstrated the Tigel-Henle apparatus adapted for use in animals and contended that with full narcosis there was no risk of laryngeal spasm, and therefore no occasion for endotracheal anæsthesia. Dr. C. F. Hadfield described a successful anæsthetic given by him for tooth extraction to a 20-year-old Pekinese.

TRENCH FEVER UNDER PEACE CONDITIONS?

A DISEASE of war, springing up mysteriously in 1915 and disappearing as mysteriously in 1919—such is the generally accepted view of trench fever, now considered of historical interest only. Yet no one has adequately explained its complete disappearance after the late war, although its vector, the louse, has survived the conflict. Dr. P.-J. Braslawsky,[1] of Kieff, who reports a case much resembling trench fever, says that during the typhus epidemic of 1920–21 there was a considerable number of cases in the neighbourhood of Kieff of which he personally observed 22. Since then he has seen from 1 to 3 cases yearly, up to 1925, making 32 cases in all. He suggests also that the Wallachian or Moldavian fever described by Dehio in the Russo-Turkish War of 1877–78 was identical with trench fever, and that a series of these cases among the children of a Berlin family described by Apolant in 1904, as well as that of a nurse recorded by Weitz in 1910, were also examples of the disease. Further, a five-day fever, endemic in Galicia for a long time before the war, has been identified with trench fever by Tchirikov and by Francke. Braslawsky therefore thinks it reasonable to suppose that trench or (as he prefers to call it) five-day fever is endemic in certain parts of Eastern Europe, appearing in occasional and often unrecognised cases, and forming a reservoir in the civilian population from which great epidemics may originate in times of war. The only other cases reported since the end of the war appear to be two in Japan recorded by F. Katsurada and J. Yoshino in 1927[2]; but rare diseases are seldom noted unless they are looked for. Although the one recorded by Braslawsky showed four characteristic rises of temperature about every fifth day, it was not typical, since the tenderness of the tibiæ recorded by various observers in proportions of from 50 to 80 per cent. of cases was not present. Unfortunately the only pathological investigation carried out was to exclude the presence of malarial parasites. Presumably the best proof of the continued existence of the disease would be the agglutination of rickettsia bodies from the excreta of lice fed on suspected trench fever patients in the presence of immune serum from animals immunised with infective lice excreta, on the lines of the work of J. C. G. Ledingham.[3] Since the blood of infected persons has been found to be still infective for a period up to 443 days[4] such examination should not prove impossible.

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[1] Paris méd., Jan. 14th, p. 41.

REPORTS ON CHILD GUIDANCE

As the outcome of a White House Conference on Child Health and Protection, called by President Hoover, a subcommittee on psychology and psychiatry was appointed, consisting of eight distinguished psychiatrists, including Prof. Adolf Meyer. Their report, now issued,[5] may be accepted as the considered view of those in the United States who have had most experience of child guidance. Since it is in that country that there has been most activity in this field, and perhaps also most enthusiasm and most optimism, it is of special advantage to get so sober and moderate a review of the subject as is to be found here. Propagandist exaggerations of the need of psychiatric treatment for children, and of the advisability of prompt interference are not accepted, nor the extravagant claims for personnel and time in running such clinics. The place of the general practitioner, the pædiatrician, the social worker, and others who may be concerned is considered temperately. An account of the discussions of the subcommittee is included, and an appendix, with sections on clinics with definite relation to courts, and on special training centres and schools such as the Child Guidance Institute in New York and the Merrill-Palmer school. A valuable section on psychiatric social workers, written by Miss Mildred Scoville of the Commonwealth Fund, provides a clear and vigorous contribution to the difficult question of the relation of these indispensable workers to the psychiatrist and to general social and medical problems of adjustment. This volume is by far the most useful survey of the broader aspects of child psychiatry that has as yet appeared, and should be studied by all who are interested in the development of the work in this country.

The British Child Guidance Council, subsidised by the Commonwealth Fund, has now been established for six years, and has instituted in London, Glasgow, Liverpool, Manchester, and Birmingham clinics for treatment and for training social workers in the delicate task of ascertaining how the child reacts to the environment of home and school, and of altering that environment when necessary. Since the child's environment largely consists of its parents, any attempt to alter it means a systematic education of the parents, and so the child guidance worker is concerned more directly with adults than with children. Dr. William Moodie, at a meeting of the Council held on Jan. 23rd, pointed out that besides instructing its workers the Council undertakes widespread propaganda directed to teachers, doctors, and social workers in other branches. Dr. R. H. Crowley laid great stress on the advice given in the last annual report to child guidance workers: to be sensitive to changing needs and equipped to meet them.

PNEUMATIC MACHINERY AND JOINT LESIONS

EVERY step in industrial progress is apt to bring with it some unforeseen addition to the roll of occupational diseases. Recent reports suggest that machinery driven by compressed air is not guiltless in this respect. Pathological changes in various parts of the body have been described in workers handling pneumatic drills, notably lesions of the bones and joints of the upper limb. The condition has apparently attracted little attention in England, but in Germany especially it is a hazard scheduled under the Workmen's Compensation Act as an industrial disease. This official recognition has been criticised on the ground that the clinical picture is still somewhat vague, and the ætiological relationship with pneumatic drills not established beyond doubt. In a recent paper[1] Meiss sets forth the results of an attempt to end this uncertainty. His conclusions are based on an examination of 107 men employed as riveters or assistants. As a control, 80 manual workers from other fields of labour and 30 non-manual workers were examined. In the first group, 24 men showed changes in and around one or both elbow-joints, and in several cases other joints of the upper limb were also affected. It is suggestive that in the only left-handed worker the condition affected the left elbow only, while in the remainder the right arm was the more markedly involved. In the affected elbow-joint the appearances revealed by X rays resembled those of osteo-arthritis, more especially of the head of the radius. Osteo-arthritis of the elbow-joint was found in five of the larger and one of the smaller control groups, and thus cannot be regarded as necessarily due to the use of pneumatic tools. Of greater diagnostic import, in Meiss's opinion, is ossification in the origin of brachialis anticus, forming a spur upon the front of the humerus just above the elbow. This was found in 20 cases, and in none of the controls with the exception of one man who was found on inquiry to have formerly worked with a pneumatic machine. In some cases ossification was present in other neighbouring muscular attachments—viz., the insertions of biceps, triceps, and brachialis anticus; as Meiss points out, these are the muscles which fix the elbow-joint, and are necessarily exposed to intermittent increase of tension with each vibration of the machine. In several cases there were arthritic manifestations in the carpometacarpal joint of the thumb which Meiss claims to be the first to describe. The thumb is used to grasp the lever controlling the machine, and the joint is thus directly exposed to the vibrations. In one case the right acromio-clavicular joint was affected, in a man who had been accustomed to steady his tool against the right shoulder. Of other conditions ascribed to the use of pneumatic drills, including necrosis of the semilunar bone and arthritis of the sterno-clavicular and shoulder-joints, no examples were found in the present series. The clinical features included pain in the elbow-joint, which is the joint most commonly affected, the pain coming on after ceasing work (the "Ruheschmerz" of German authors), and gradually disappearing when work was resumed; also slight limitation of flexion and extension. There was little or no limitation of pronation and supination; creaking was rarely, slight muscular atrophy frequently, observed. It is emphasised that none of the men had previously complained of the pain, and that there is practically no disability connected with the condition. Where other joints were affected, similar clinical features were noted. Meiss concludes that the evidence points to a probable connexion between joint lesions and the use of pneumatic drills, but that further investigation is required before it can be regarded as proven.

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[2] Arbeiten u. Tropenkrankh. Festschrift for B. Nocht., 1927, p. 225.

[3] THE LANCET, 1920, i., 1264.

[4] Jour. Hyg., 1921, xx., 258.

[5] Psychology and Psychiatry in Pediatrics: The Problem. Report of the Subcommittee on Psychology and Psychiatry. Edited by Bronson Crothers, M.D. New York: The Century Co. 1932. Pp. 146. 7s. 6d.

[1] Nederlandsch Tijdschrift voor Geneeskunde, Dec. 31st, 1932, p. 5902.

THE HEALTH OF NEW YORK

THE severe economic distress has begun to manifest itself in New York City, according to a report of the Health Commissioner for 1932, in an increase in the number of new cases of tuberculosis. Unless conditions improve this increase in new cases will, without doubt, shortly be reflected by a rise in the death-rate from phthisis, though in 1932 the death-rate from this cause was actually distinctly lower than in the preceding years. Some of this increase in notified cases may rather be due to the admittedly extra zeal with which the department of health has intensified its work of discovering early cases, and to this extent the evidence against economic conditions is not completely convincing. A further consideration is that both the general (crude) death-rate (10·3 per 1000) and the infant mortality-rate (51 per 1000 live births) reached in 1932 their lowest recorded levels. A cause of death that does suggest a distinct increase in prevalence in recent years is diabetes, the increase being especially pronounced among women over 45 years of age. The New York Academy of Medicine has appointed a special committee, in coöperation with the department of health, to consider this problem. Another similar committee, whose report will shortly be available, has been considering the maternal mortality-rate of the city. The rate registered for 1932 was as high as 6 per 1000 live births.

The cost of the health department to New York was, in 1932, 68 cents per head, of which nearly one-third was devoted to child hygiene activities (covering both pre- and post-natal protection), and one-seventh each to the control of infectious diseases and to the supervision of food and drugs. The responsibilities of the department are wide-ranging, as will be seen from the fact that the statistics of motor-car accidents come under its eye. In New York deaths from motor-car accidents reached a peak in 1929, and in the last three years have shown some decline, which the department of health believes can be credited to the greatly increased number of signal lights installed and the extensive campaign of education in street safety inaugurated by the police department in many of the schools of the city.

CARBON MONOXIDE FROM PAINT

ATTENTION was drawn not long ago to the danger of carbon monoxide poisoning from the air of sealed compartments on board ship, and it was shown that the gas was derived from the linseed oil of the paint used in these compartments. Further investigations on this subject have been carried out by S. F. Dudley, F. G. Edmed, and R. C. Frederick.[1] The materials used in the investigation were oxide of iron paint, red lead paint, aluminium paint, bituminous compositions, and two grease paints, one of which contained a small amount of linseed oil. These materials were spread inside petrol tins which were then sealed for varying periods. After one, two, or three months' storage the air from the cans was analysed, and its lethal effects estimated by biological experiments on mice. Linseed oil was again found to be the determining factor in the production of carbon monoxide; the paint dries, oxygen is absorbed, and carbon monoxide is evolved. On board ship it seems that after painting and sealing, absorption of oxygen proceeds to such an extent as to produce an irrespirable atmosphere by the time the compartment is reopened. But at an earlier stage of the process sufficient oxygen for respiration may coexist with a dangerous quantity of carbon monoxide. A man entering such an atmosphere might breathe long enough to absorb a lethal dose of carbon monoxide; this, therefore, is a dangerous period. The quantity of paint, or perhaps rather the surface area exposed, as well as the time during which the compartment has remained sealed, will determine whether the atmosphere will poison those entering with carbon monoxide, or "drown" them from lack of oxygen.

WE regret to announce that Prof. William Phillips Graves, the well-known American gynæcologist, died at Boston on Jan. 25th at the age of 63. Professor of gynæcology at Harvard University and surgeon-in-chief to the Boston Free Hospital for Women, Dr. Graves was the author of a text-book on his subject, and was one of the two recipients of the honorary Fellowship at the recent opening of the new house of the British College of Obstetricians and Gynæcologists. Subsequently he attended the tercentenary dinner of the Society of Apothecaries of London, and conveyed a courteous greeting from the branch of the profession which he represented.

INDEX TO "THE LANCET," VOL. II., 1932

THE Index and Title-page to Vol. II., 1932, which was completed with the issue of Dec. 31st, is now in preparation. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 7, Adam-street, Adelphi, London, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

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[1] Jour. Indust. Hyg., January, 1933, p. 1.

SPECIAL ARTICLES

SOME EPIDEMIOLOGICAL FEATURES OF WHOOPING-COUGH

A STATISTICAL INVESTIGATION

BY PERCY STOCKS, M.D. CAMB., D.P.H.

READER IN MEDICAL STATISTICS IN THE UNIVERSITY OF LONDON, AT THE GALTON LABORATORY, UNIVERSITY COLLEGE

(Concluded from p. 216)

PART II

Infection within Houses.—Incubation Period

THE principal modes of infection from child to child which can be studied statistically are (*a*) within the same house, (*b*) from house to house, and (*c*) within the same school.

The distributions of intervals between the onset of successive cases within the same house are analysed in Table VIII. for Battersea and Greenwich. Of the 902 intervals of 0–3 days, more than 800 were pairs of cases recorded as starting at the same time, and it may be assumed that in practically all these instances the two children were simultaneously infected from some source outside the house, and did not infect one another. No doubt this also applies to some of the intervals of 4–6 days, of which there were 87 in Battersea and 72 in Greenwich. It is difficult to decide a priori whether it is more probable that the incubation period could be as short as three or four days, or whether the incubation periods of two children simultaneously infected could differ by this amount, or whether there is an appreciable likelihood that two children living in the same house may be infected from the same outside source on different days. This is virtually settled, however, by the form of the curve in Fig. 1 between 0 and 6 days, for this curve must be the resultant of two component curves which cannot differ much from the hypothetical representation of them as dotted lines, and these suggest that direct infections with intervals as short as two days may be a possibility, and also that almost all intervals of four days or more may be attributed to direct infection of the second child by the first.

TABLE VIII.

Interval between onset of cases.	Frequency of intervals.			Frequency corrected to a range of one day.	Per cent. of successful plate cultures (Madsen).
	Battersea.	Greenwich.	Total.		
0–3 days	521	381	902		75
4–13 "	416	229	645	64·5	57
14–20 "	178	102	280	40·0	
21–27 "	61	58	119	17·0	61
28 "	16	6	22	10·6	45
29–34 "	18	34	52		
5 weeks	18	17	35	2·9	40
6 "	4	12	16		9
7 "	12	12	24	2·4	—
8 "	3	6	9		
9 "	2	5	7	1·1	—
10 "	4	4	8		
11 "	3	6	9	1·0	—
12 "	4	1	5		
3–6 months	31	38	69	0·8	—

In a large number of instances the interval could be only measured as "one week," an approximate estimate which might mean 6, 7, or 8 days, or even 5 or 9 days. The same difficulty occurs at 14 days. Grouping together 5–9 and 10–17 day intervals in order to escape this difficulty, the Battersea frequencies used in drawing Fig. 1 were as shown in Table IX., and they produce when plotted a perfectly smooth curve. The form of this curve shows that the most frequent interval between successive cases in a house is one week, that the probability of a case occurring at a fortnight's interval is about half as great as this, at three weeks about one-fifth, at a month about one-eighth, and between three and six months about one two-hundredth. It must be concluded that it is possible for the incubation period to be as short even as three days, but it will most probably be a week. The upper limit of the possible incubation period cannot be determined from this data since it is not known how long after onset the infection was conveyed to the second child. Where infection occurs after long intervals the cause is no doubt one of those exacerbations of the more infective catarrhal condition brought about sometimes by superimposed catarrhal infections, which are often noticed in whooping-cough. During such "relapses" to the catarrhal stage it must be presumed that the patient again becomes infective.

Risk of Family Infection

In the last column of Table VIII. are shown the percentages of successful cultures of *Hæmophilus pertussis* reported by Madsen,[9] as obtained by Danish bacteriologists, when plates of a special medium of potato, horse blood, and agar were held at 6 inches from whooping-cough patients whilst coughing. These percentages were based on 914 cases of whooping-cough tested during the first, second, third, fourth, fifth, and sixth weeks of the disease, and more recently Gardner and Leslie [7] have obtained similar results in England. There is an obvious correspondence between the time required for the two measures of infectiousness to decline to a low level indicative of small risk. Although the practice of terminating isolation at the end of six weeks is justifiable on the grounds of greatly diminished risk, the evidence from plate culture experiments gives no grounds for any dogmatic promise that the danger of infection is entirely at an end, since an infective relapse may occur. The Battersea figures show that in fact one case out of every hundred is followed by another in the same house after an interval between six weeks and six months, a small risk but not entirely negligible.

Selecting any child at random who has developed whooping-cough, what is the probability that another child will develop it in the same house (i) within three days, presumably by having been infected from the same source in most cases, (ii) after three days but

TABLE IX

Interval, days ..	0	1	2	3	4	5–9	10–17	18–20	21–27	28–34	35–41	42–90	3–6 mths.
Frequency	465	26	12	18	35	286	231	42	61	34	18	32	31
Mean frequency for a single interval	465	26	12	18	35	57·2	28·9	14·0	8·7	4·9	2·6	1·6	0·3

within a month by direct infection, and (iii) after a month but within six months? From the Greenwich data the totals at risk to be followed by a second case which could be reported within the range of the records were respectively 4102, 4070, and 3800 for these intervals, and the respective probabilities were therefore 381/4102, 395/4070, and 101/3800 according to Table VIII. For Battersea the totals at risk during 1925–29 to be followed by a second recorded case were *in each instance* 5574, and the probabilities were therefore 521/5574, 671/5574, and 99/5574. It follows from Table X. that in London about 22 per cent. of all children with whooping-cough will have an associated case within the house within six months, and in about 13 per cent. the infection will presumably be conveyed by the first child to the second. It must be noted that these probabilities are based upon the whole population regardless of whether there are any other children at home liable to be attacked or not. Moreover they are founded on the assumption that reporting was complete, but though this was not the case and the totals are therefore too small,* the *ratios* of second to first cases would not, I think, be seriously affected.

TABLE X

—	Probability of second case in same house.	
	Battersea.	Greenwich.
Within 3 days	0·094 or 1 in 10·7	0·093 or 1 in 10·8
4 to 28 days after ..	0·120 or 1 in 8·3	0·097 or 1 in 10·3
1 to 6 months „ ..	0·018 or 1 in 56	0·027 or 1 in 38

From data given elsewhere [1] it appears that in Battersea the proportions of home contacts excluded from school at ages 5 and 6 who were attacked by whooping-cough after a few days but within six months were respectively 24/195, or 12·3 per cent., and 17/200, or 8·5 per cent., and if these are increased in the ratio 22 : 13 to include the risk of simultaneous infection, they become approximately 21 per cent. at age 5, and 14 per cent. at age 6. Half the mean annual attack rates recorded in children as a whole at ages 5 and 6 were respectively 3·51 and 1·75 per cent. The risk of contracting whooping-cough at ages 5 or 6 was therefore increased six- or eight-fold by the occurrence of a case in the same house. At pre-school ages the relative risk would no doubt be much greater, since the children who were not home contacts would not be exposed to the danger of school infection. The Holborn data showed [8] that of 721 children under 10 who were home contacts and who had not previously had whooping-cough, and who had also escaped any signs of attack during the first three days from onset of the first case, 196 were attacked within six months. Increasing this total in the ratio 22 : 13 to include simultaneous infections, it follows that about 45 per cent. of children under 10 *not previously attacked* would be expected to have whooping-cough *concurrently* with or *within* six months of onset of a case in the house, that is to say, about half would escape by natural or latent immunity.

House-to-house Infection

The distribution of intervals between the onset of whooping-cough in children living in neighbouring houses provides a clue to the importance of house-to-house infection. In Table XI. the result of analysing the intervals between cases in houses in the same street in Greenwich whose numbers differed by 2, 4, 6, 8, is shown for comparison with the distribution of intervals in the same house. Since the numbering of the great majority of streets is alternate, and of a small minority consecutive, houses whose numbers differ by a small even integer would, except in a few instances of end houses in consecutively numbered streets, be on the same side of the street. Where the difference in number was 2, houses would in most instances be next door to each other, but in some instances next door but one; where the difference was 4, houses would be mostly next door but one; but in some instances next but three, and so on. By grouping together houses differing in number by 11, 12, 13 . . . 20, a control group of houses was obtained which would be either on the opposite side of the street, or at least six houses away on the same side.

TABLE XI

Frequency of Intervals between Cases in Neighbouring and Distant Houses (Greenwich 1919–29)

Interval.	Same house.	Same street, with numbers differing by—					Houses in different streets paired at random.
		2.	4.	6.	8.	11–20.	
0–3 days	381	2	1	2	3	10	1
4–28 days ..	395	18	8	8	9	59	7
4–13 weeks ..	97	8	11	15	11	76	16
3–6 months ..	38	8	7	10	8	56	17
6–9 „ ..	10	12	8	5	4	41	12
9–12 „ ..	6	5	10	8	4	42	8
1–2 years ..	64	28	33	29	19	168	50
2–3 „ ..	56	16	25	20	25	138	48
3–4 „ ..	67	21	31	19	24	165	34
4–5 „ ..	46	20	23	25	17	170	34
1–5 years ..	233	85	112	93	85	641	166

The frequencies were then corrected to allow for the limited range of time over which the records were available, thus whilst practically every case during the decade was at risk to be followed by another, one day later, only about 8/10 of them were at risk to be followed by another, one year later, since 2/10 occurred during the last year of the records. The factors by which the actual frequencies had to be divided in order to correct for this are shown at the foot of Table XII. The corrected frequency distributions of intervals between cases when expressed in terms of the corrected frequency of intervals of 1–5 years, a number which could not be in any way affected by infection, will then indicate whether there was a greater risk of infection passing between children in neighbouring houses than between children in houses at a greater distance apart, and also how the risk changes with lapse of time. These are shown in Table XII.

Considering first the relative frequencies of 4–28 day intervals, which give the best index of the risk of house-to-house infection, for houses at a distance in the same street this was four times that expected *if incidence of cases was at random*; for houses whose numbering differed by 4, 6, or 8 it was also four times that expected, but for houses numbered two apart, most of which would be next door pairs, the risk was 9·8 times that expected. This shows that in Greenwich the risk to a child of contracting whooping-cough is more than twice as great if there is a case next door as it is if there is a case in some other house in the street, but is not appreciably greater if there is a case two or three doors away. When there is a case in the same house the risk is about seven times as

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* I have shown [1] that in Battersea about two-thirds of the actual incidence at all ages is recorded.

TABLE XII

Houses in same street.	Corrected frequency of intervals in terms of mean corrected frequency for 1–5 years, reduced to an equivalent range.						
	4–28 days.	0–3 months.	3–6 months.	6–9 months.	9–12 months.	1–2 years.	2–5 years.
Pairs in same house	71·42	36·87	1·77	0·49	0·31	0·86	1·05
Pairs in houses with numbers differing by 2	9·77	3·38	1·06	0·97	0·94	0·99	1·00
Pairs in houses with numbers differing by 4, 6, or 8	3·93	2·53	1·03			0·89	1·03
Pairs in houses with numbers differing by 11–20	4·19	2·40	1·02	0·80	0·85		
Houses in different streets, paired at random	1·94	1·55		0·91		1·03	0·99
Correction factors for duration of records	1·000	0·974	0·884	0·833	0·802	0·761	0·614

great as when there is a case next door, or 18 times as great as when there is a case in some other house in the street.

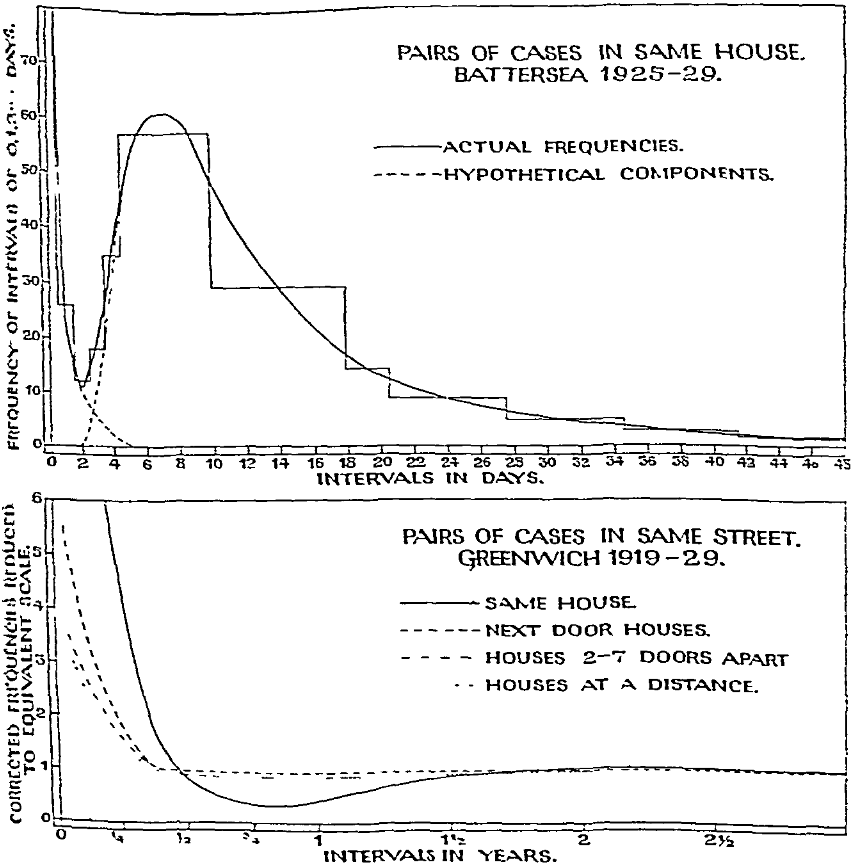
At intervals longer than three months there is no evidence of any appreciably greater risk of infection from next door than from any other house in the street. There is still a risk of infection within the same house, however, as noted above. At 6–12 months' interval there is only half as great a risk that a second child will develop whooping-cough in the same house as that a child will develop it in some other house in the street, whilst at 1–2 years the risk is virtually the same. This forms part of the evidence, given elsewhere,[1] leading to the conclusion that a transient latent immunisation of contacts, protecting them for about a year, occurs. These results are more clearly depicted in the lower part of Fig. 1. As a further check a few houses in different streets were paired at random; with the results shown in Tables XI. and XII. The results do not differ significantly from those for houses at a distance in the same street except that at intervals of 4–28 days the risk is less, suggesting that infection is conveyed between children living in the same street even though they are not living next door.

In the lower portion of Fig. 2 the mean epidemic curve for the nine wards of Battersea in 1928–29, obtained by bringing together the months of maximal incidence in each ward, measuring the time scale forwards and backwards from this and totalling the numbers of cases in each corresponding month on the scale, is compared with the curve for the whole borough, for which the maximal month was December. The amount of dispersion on the time scale is not appreciably diminished by thus comparing the mean epidemic in a single district with that in the borough as a whole—that is to say, although the epidemic wave does not run quite concurrently in the neighbouring districts, it does not move about to the same extent as measles, but is more widely diffused over the whole borough at any given time.

Infection within Schools

In the upper part of Fig. 2 a similar procedure has been followed in the Wandsworth epidemic of 1926–27 in order to arrive at a mean epidemic curve for 21 of the largest schools, and when this curve is compared with that for the borough as a whole, after reducing each to the same total of 1000 cases, there is a notable contrast. The mean school curve rises and falls again much more rapidly than does the curve for the borough as a whole, and reaches a much higher peak. This must indicate that infection is more freely carried from one child to another, and the epidemic comes more quickly to an

FIG. 1



Frequency distributions of intervals between onset of successive cases of whooping-cough.

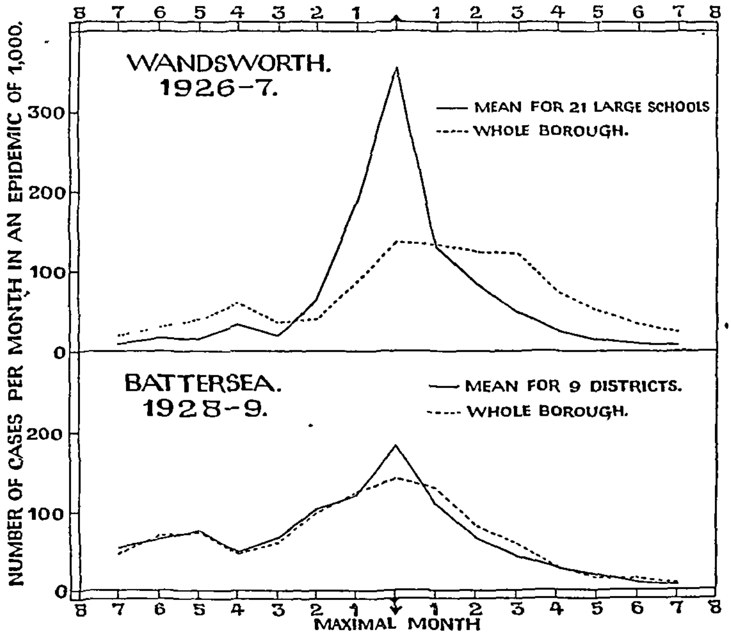
end within a given school population than within the population as a whole.

How is this accounted for? No preventive measures are used except to exclude home contacts. If these were kept at school the epidemic in the school would obviously come to an end just as quickly, perhaps more quickly, and it seems necessary to conclude that the epidemic ends by practically all the susceptible children at school being attacked or rendered immune for the time being. Outside the school, however, the epidemic goes on amongst the younger children almost unchecked, and because they are more scattered it takes a longer time to reach the same end.

Possibility of Control

The question arises whether the practice of excluding from already infected schools home contacts to whooping-cough cases does any good, whether in fact it is not actually harmful. Most of these children spend their time playing with children of pre-school age, and since only an occasional supervision of these children is possible, and the most infectious stage precedes the onset of the whoop, many of them may infect younger children. If every susceptible child attending an infected school is going to either have an attack or develop a latent immunity in any case before the epidemic runs its course, and it is difficult to doubt that in face of the evidence, these children would be better at school until the first sign of catarrh or cough, when they could be immediately sent home and the mothers instructed to keep them indoors. Owing to the much greater danger of whooping-cough to young children it should be our aim, as in measles, to delay as long as possible the attack by seeking to protect the children of pre-school age from infection by school-children. In justification for this it is sufficient to notice that the fatality-rate in Battersea fell from 4 per 100 cases at age 0–1 to 0·2 per 100 at ages 5–10. Street infection has been shown to play some part in the spread of infection, and this might be reduced by the action suggested above.

FIG. 2



Whooping-cough epidemics in London.

Within the home it is also worth while to attempt protection, for although complete isolation may be impossible, a sufficient degree of separation during the most infectious stage may be practicable to so dilute the amount of infection to which the younger children are exposed as to enable them to acquire the necessary temporary latent immunity to secure them from the immediate danger, supposing the theory to be correct. The contention that "they had better get it over whilst they are young" is not a justifiable excuse for saving trouble to parents and school authorities, because in addition to the rapidly diminishing danger to life and to subsequent health with advancing age, there is a reasonable chance, of the order two in five, that if a child escapes immediate attack he or she may escape it altogether. Possibly the use of convalescent serum or parent's blood for home contacts may eventually provide, as in measles, a method of securing the occurrence of a mild attack which will produce a permanent immunity, a more satisfactory result than the mere production of temporary immunity, and in this case isolation within the house would become not only unnecessary but illogical.

Conclusions

(1) The notification records of whooping-cough during the last decade in the metropolitan boroughs of Greenwich, Battersea, Wandsworth, and Holborn combined show an excess of female over male incidence amounting, after correction for changes in sex ratio with age in the populations at risk, to 5 per cent. at ages up to 4 years, increasing to 20 per cent. by the eighth year and 50 per cent. by the tenth year. The excess was considerably greater in Greenwich than Battersea. At ages under 7 there was in Greenwich no excess of girls amongst cases commencing from October to January, but an excess of about 20 per cent. amongst cases arising during the other months. The sex ratio was not significantly different in secondary cases in houses from that in first cases. The age-distribution of whooping-cough incidence is slightly different in the rising phases of epidemics, a somewhat larger proportion of children aged 3 to 6 being attacked.

(2) Children aged 4, 5, and 6 are more liable to infect other children in the same house with whooping-cough than are children of other ages. A study of the distribution of intervals between the onset of cases in the same house leads to the conclusion that the most frequent interval is one week, that the probability of a case occurring with a fortnight's interval is about half as great as this, with three weeks about one-fifth, with a month's interval about one-eighth, and between 3 and 6 months afterwards about one two-hundredth. The incubation period may, it would appear, be as short as three days, but is most likely to be about a week. Infection after six weeks is probably due to an exacerbation of the infective condition brought about by a super-

imposed catarrhal infection. About one case in every hundred is followed by another case in the same house after an interval between six weeks and six months.

(3) The risk of contracting whooping-cough at ages 5 or 6 was increased six- or eight-fold by the occurrence of a case in the same house, and at pre-school ages it would be increased to a greater extent. The risk, at all ages under 10 years, of contracting whooping-cough within a month was, in Greenwich, seven times as great if a case occurred in the same house as if one occurred next door. The risk of contracting whooping-cough within a month was more than twice as great if there was a case next door than if there was a case in some other house in the street, but was not appreciably greater if there was a case two or three doors away. About 45 per cent. of children under 10 who have not had whooping-cough may be expected to contract it concurrently with, or within six months of the onset of, a case in the same house.

(4) Infection between children living in the same street commonly occurs, and the risk of it is greatly enhanced for children living next door to one another. School epidemics tend to come to an end more quickly than in the surrounding district, and it seems probable that practically all the susceptible children at school are either attacked or rendered temporarily immune. The value of excluding from infected schools home contacts to whooping-cough cases is questionable; it would probably be better to keep these children at school until the first sign of catarrh or cough, and then send them home to be kept indoors. It is worth while, if at all practicable, to attempt isolation of a child with whooping-cough from other children within the home during the most infective period, particularly if any of these contacts are under 4 years of age, since this may increase the chance of the remaining children acquiring temporary latent immunity or escaping infection, and postponing the attack until an age when the disease is less dangerous.

(5) The proportions of children known to their parents to have had whooping-cough before entry to school at ages 3, 4, 5, and 6 are greater in those boroughs of London where the population is less dense and better housed. Though this may be partly accounted for by more accurate observation and diagnosis in such areas, it is evident that increased crowding of the population does not in different districts of London result in increased incidence of whooping-cough, but rather the reverse, a phenomenon difficult to account for unless latent immunisation occurs.

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MANCHESTER CANCER HOSPITAL.—The Manchester and Salford Hospital Saturday and Convalescent Homes Fund has endowed a bed in the new Cancer Hospital at Manchester at a cost of £1000.

MEDICINE AND THE LAW

Royal Veterinary College: Libel Action

SOME five years ago Capt. Hobbs undertook to raise £20,000 for the Royal Veterinary College at Camden Town, which had fallen on evil days. This sum was thought sufficient to provide a special department for dogs, including a hospital for non-infectious canine patients, an operating theatre, and perhaps a special lecture theatre. Capt. Hobbs was particularly careful to obtain assurances that no part of the money would be used for any vivisectional purpose. Mainly by founding the Tail Waggers' Club and by organising National Dog Week he raised the required sum with the aid of thousands of contributions from dog-lovers. Strange as it may seem, his campaign met with bitter opposition. The College was licensed as a place where experimental work might be done; this fact caused the movement to be suspect. Miss Blanche Watson, propaganda secretary to the local branch of the British Union for the Abolition of Vivisection, wrote a vigorous letter to a Hull newspaper during the second National Dog Week in 1929. She warned dog-owners that by entering their pets as Tail Waggers they were encouraging vivisection. "The long and the short of the business," she wrote, "is to build and maintain the vivisection laboratories at the Royal Veterinary College. National Dog Week and its outcome, the Tail Waggers' Club, are simply masquerading under the cloak of humanitarianism, their real object not being the welfare of the dog but its exploitation." She quoted a statement from a London newspaper that the object of the Club was "the thrusting of torturous experimentation by the arch-exploiter man" upon hapless creatures whose consent was neither asked nor given. She mentioned no names, but Capt. Hobbs (sometimes described as the Tail Wagger-in-Chief) naturally complained that the accusation meant that he was a liar and a fraud. He brought an action against Miss Watson for libel, and he called witnesses who said they thought her letter referred to him and they gathered the impression that he must be a hypocrite. Under cross-examination he agreed that many people felt strongly (as he did himself) about the vivisection of dogs, that the College was registered as a place for vivisection experiments, that some of its professors held licences for that purpose, and that there was a research institute "just across the lawn from the College." This institute, he said, had been entirely excluded from his consideration when he was raising the fund. All these questions to him were directed by Miss Watson's counsel in order to establish her plea that her letter was fair comment on a matter of public interest. Sir Frederick Hobday, principal and dean of the College, explained that it had been arranged that no part of the fund should be used for what was known as vivisection. He described the work of the College, its educational side, and its busy "out-patients' department" to which poor people brought their animals. The research institute was under Government control, with a different governing body from that of the College; the money for the institute came wholly from the Ministry of Agriculture. The defendant in the witness-box declared her abhorrence of vivisection. In 1929 she saw it stated that the National Dog Week was held to endow a chair of research. She understood the statement to mean investigation into human and animal diseases by experimentation on the living animal. To this she was strongly opposed. When she wrote her letter she knew nothing of Capt. Hobbs and had no intention of injuring him. In cross-examination she admitted that she thought the organisers of National Dog Week and the Tail Waggers' Club were deliberately misleading the public as to their intentions. She agreed that she meant to convey that they were getting money from the public by untruths and false pretences. She did not believe that any good had been done by human or animal inoculation. Asked as to the discovery (by means of inoculation) that rats were carriers of bubonic plague, she said it was a quite unnecessary exploitation of the rat because plague could be investigated by other means. In all research work, she said, there was torturous experimentation on living animals. Mr. Justice Branson told the jury that Capt. Hobbs, who was not named in the letter, had no right to complain unless it was understood to apply to him. If the jury thought the letter did imply that he was a hypocrite and had obtained money by the false pretence that he meant to benefit the dogs, whereas his intention was to submit them to vivisection experiments, then the jury might think the letter was defamatory. On the question of damages the judge said that, if the jury thought the plaintiff was entitled to succeed, they would consider the fact that Miss Watson rushed into print without taking the elementary precaution of asking Capt. Hobbs what the real object of the fund was. The jury found for the plaintiff and awarded £500 damages. Judgment was given for this sum with costs.

The limits of fair comment are generous. "Every latitude," once observed Lord Esher, "must be given to opinion and to prejudice." However wrong the opinion expressed may be in point of truth, or however prejudiced the writer, it may still be within the prescribed limits. But the defence of fair comment can be countered if the jury take the view which they took of Miss Watson's letter. She did not, it seems, attempt to justify what she had said. Every vivisection controversy invariably arouses strong feelings. At the beginning of the plaintiff's action, Capt. Hobbs's counsel announced that the trial would involve acute contention between a protagonist of the Tail Waggers' Club and a convinced antivivisectionist; it would therefore be desirable that the jury should not include either persons who held strong views against vivisection or persons whose dogs were members of the Tail Waggers' Club. Two members of the jury were found to belong to the latter class; they left the box and were replaced. The judge confessed that his dog was a Tail Wagger, and, later in the case, when a reference was made to societies formed to combat antivivisection propaganda, he felt obliged to mention that he was himself a subscriber to the Research Defence Society. Nobody objected, however, to his trying the case. Miss Watson's counsel was not concerned to prove that the antivivisectionists were right, but merely to show that the subject was one of public interest about which people might be expected to feel keenly and to express themselves vigorously.

Hospitals' Responsibility for Nurses

A recent Scottish appeal (Reidford *v.* the Lord Provost, Magistrates, and Councillors of Aberdeen) furnishes a valuable statement of the legal responsibility of hospital managers in Scotland in respect of a patient's claim for damages for alleged neglect on the part of a medical practitioner or nurse on the hospital staff. It also shows that the Scots law and the English law reach much the same result though by different principles.

Mr. Reidford, a commercial traveller, was an inmate of the Woodend Hospital, Aberdeen, on two occasions in 1930. He claimed damages against the Aberdeen corporation (as the authority responsible for the hospital) for the alleged carelessness and neglectful treatment which he said he received from the nursing staff. The Aberdeen sheriff court dismissed his action on the grounds that his averments were irrelevant and lacking in specification. This, if a southern lawyer may venture a paraphrase, means that firstly, even if the alleged facts were proved, they would fail to furnish a proper legal basis for a claim, and secondly, the claim failed to supply sufficient particulars—e.g., as to the names of the nurses—to give the hospital authorities a fair chance to meet the allegations. The judgment of the Lord President on the appeal to the Court of Session, well reported in the *Scotsman* of Jan. 28th, indicates that Mr. Reidford complained (*a*) that during his first fortnight in the hospital the nurses omitted to supply him with certain alkali powders at the regular and appropriate intervals as directed by the doctors, and (*b*) that the nurses did not on their own responsibility administer the laxatives which his condition required. Other and later allegations of inadequate food and inattention in the wards were apparently too vague to be considered.

Dealing with the legal position the Lord President first allowed himself the mild criticism that a similar Scottish case (Lavelle's case) which had recently been decided in the House of Lords had been dealt with by their Lordships on the lines of English decisions instead of in accordance with Scottish law. This is a point on which the Scottish courts, administering their own system of law based on that of Rome, are properly sensitive. The Lord President went on to explain the Scots law applicable. There was a complete and infallible test of the liability of hospital managers in the Roman distinction between two kinds of hiring contracts, *locatio operis* and *locatio operarum*. It is a feature of the contract classified as *locatio operis* that the employer is answerable for all defects whether due to his own want of skill and carelessness or that of his servants and subordinates. A *locatio operarum* exists where someone of professional skill is called upon to do and advise what his skill dictates and not what the employer orders: "the person who makes with such a man or woman a *locatio operarum* is not liable for the negligence of the professional person within the department of that professional person's function and skill." It was therefore hopeless to try to make the hospital managers responsible for alleged neglect on the part of the hospital doctors or surgeons whom they permit to exercise their professional functions in the hospital. "The reason is that in the performance of these duties the medical man or the surgeon is making available to the patients his services; he is not acting as the servant of the managers at all; they can neither give him orders nor control him within the limits of the performance of his professional skilled duty." There might be an action against the individual doctor or surgeon; that was another matter. In the Aberdeen case it was clear that the nurses were not, and could not be, acting as the servants of the managers: "they were acting within the department which their professional skill entitled them to act in"; if they were acting expressly on the doctor's orders they were still acting within the area of professional skill and function. "It would be a very dangerous doctrine," concluded the Lord President, "to suggest that the managers of an infirmary were to be supposed to have laid down any rules with regard to any item of the medical treatment of anybody who came into their sick-house. All they undertake is to provide an efficient, well-heated, clean, wholesome sick-house and furniture for the reception of patients, and no doubt to provide the necessary medicines and food." They do not undertake to treat or to cure or to operate upon anybody who is admitted to their institution.

If we compare this judgment (so important at a time when a progressive hospital policy is making treatment available for increased numbers of the public) with the English law, we find much the same result. All members of the staff of an English hospital are personally responsible for damages due to their own negligence. But, if there is a question of suing the authorities responsible for the management of the hospital, there is a simple question of agency and supervision. The hospital is liable for the negligence of persons who are its servants in the sense that their work is subject to the supervision of the committee of management. The hospital is not liable for negligence on the part of physicians or surgeons, paid or honorary, while they are exercising professional skill in respect of which the hospital management has neither the power nor the competence to interfere. The English legal position was made clear in 1905 in Evans *v.* Liverpool Corporation, on a complaint by a patient in the city's fever hospital. It was held that the corporation merely undertook that the patients admitted to its hospital should have competent medical advice and assistance; having appointed a competent and duly qualified medical practitioner the corporation was not liable for his negligence. Thus English law and Scottish law reach the same result, though it may be that the Scottish law gives greater protection to the hospitals in cases where complaint is made against nurses—e.g., in injuries from hot-water bottles. English law would presumably ask whether the alleged negligence arose in work which the nurse was doing as servant of the hospital. The question whether she was in fact acting under the supervision or orders of the medical practitioner in charge of the case has cropped up more often perhaps in patients' claims against the practitioner than in their claims against the hospital. Scottish law would apparently be more ready to say that in all nursing work the nurse's actions would be within the area of professional function and skill and therefore independent of control by the hospital managers. If the Scots law is in fact more favourable, there seems good reason for asking that the English law shall fall into line.

IRELAND

(FROM OUR OWN CORRESPONDENT)

MEDICAL MEN IN THE DÁIL

STUDYING the full list of elections to the Dáil one finds that it contains the names of eight medical men. They are Sir James Craig, Drs. J. J. O'Reilly, J. Lynch, T. F. O'Higgins, R. E. Davitt, F. C. Ward, P. J. O'Dowd, and J. Ryan. Two of these—Drs. Ryan and Ward—held office in the Government. Only one of the medical deputies is coming fresh to the Dáil—namely, Dr. R. E. Davitt. Dr. Davitt is one of the physicians to Jervis-street Hospital, Dublin. Two medical men who have been deputies for several years—Mr. T. Hennessy and Dr. Myles Keogh—have failed to secure election. Both will be missed, for both were prominent figures, and Mr. Hennessy was generally regarded as expressing medical opinion in public affairs. He has an intimate knowledge of medical matters in Ireland, and particularly of the conditions of the public medical services. In his championship of the rights and privileges of the medical profession he never permitted himself to forget that the interest of the public is supreme. He was popular with all parties in the Dáil, and both there and outside his absence will be regretted.

AUSTRALASIA

(FROM OUR OWN CORRESPONDENT)

RECONSTITUTION OF NEW SOUTH WALES MEDICAL BOARD

SOMETHING of a stir has been caused by the Minister for Health, Mr. R. W. B. Weaver, reconstituting the New South Wales Medical Board. Members of the previous Board, who had given many years of honourable service, were communicated with by letter from the Minister, who stated that in very many directions there was a need for an entire rearrangement of the existing conditions. Further, that he had given consideration to the functions of the New South Wales Medical Board and, while deeply appreciative of the work of this honorary body, he considered the time had now arrived for a general reconstruction of the Board. To permit of this he deemed it expedient that the appointments of all members of the existing Board be terminated, and suggested that the members should tender their resignations.

The members of the Board met and communicated with the Minister, stating that they desired to deal with the letter as a Board on Dec. 14th, when they would furnish him with a reply. However, on Dec. 10th a statement appeared in the daily press purporting to emanate from the Minister and indicating that "about seven members of the Medical Board would have to retire on the policy adopted by him, for the reason that they had reached or were over the age of 65 years."

In the morning press of Dec. 14th it was announced "that Mr. Weaver had issued a minute which had been signed by the Government declaring vacant all seats on the Board, and had nominated seven doctors to form the reconstituted Board." A number of letters appeared in the daily press criticising the Minister for his action in this matter, the criticism being levelled not at the personnel of the new Board, but at the manner of dismissal and lack of courtesy to members of the previous Board.

PARIS

(FROM OUR OWN CORRESPONDENT)

AN EXAMINATION SCANDAL

THE suicide of a woman resident medical officer of a Paris hospital has given a tragic turn to a series of incidents which have not been without their lighter side. She was involved in the scandal of the recent examination for resident hospital appointments, and after being summoned, with all the other interns concerned, to give evidence before a representative of the public authorities, she had a nervous breakdown. This examination began last October, between 600 and 700 candidates presenting themselves for about 80 vacancies. In order to eliminate the possibility of the examiners being tempted to favour their own pupils or other candidates towards whom they might feel a kindly partiality, the examination was conducted so as to assure the anonymity of the candidates. Their numbered but unsigned papers were read aloud one after the other to the examiners by a staff of interns, to which the doctor in question belonged. By sandwiching these readers aloud in between the examiner and the examinee, it was hoped that the former would not only be saved from the exhausting task of deciphering much spidery MS., but would also find it easier to pass objective judgment. But unfortunately there seems to have been a widespread belief among the examinees that extra points could be gained if clues to their identity could be furnished in their papers. The whispers about cheating grew into a murmur, and finally into such a general uproar that official action had to be taken by the Assistance Publique. The official inquiry led to the startling discovery that out of 620 candidates, as many as 282, or 45 per cent. of the total, had sent in one or more papers marked in some distinctive fashion. It has therefore been decided to cancel the original examination. A new examination will be held in a month or two, and new examiners will set new questions to the same candidates. If most of the candidates who were successful in the first examination are so again, a cogent answer will be forthcoming to the old objection that such examinations, even when conducted honestly, put candidates at the mercy of too big an element of chance. But this is a very big "if."

THE DOCTOR'S DAY

"Come, tell me how you live," I cried,
"And what it is you do!"

XIII.—AN INDUSTRIAL DOCTOR

BY an "industrial doctor" I mean a doctor who is employed full-time in a factory. In order to give a more intimate picture of the life, I will give a brief description of the factory in which I work and the size of the medical staff. It should be understood that industrial medicine in this country is developing slowly, and that many factories now have clinics, varying in size from a part-time nurse to a complete staff of full-time doctors and nurses.

In the factory where I am employed we make foodstuffs and employ about 5000 workers, of whom rather more than half are men and boys. The medical staff consists of two doctors and three trained nurses, one of whom spends all her time sick-visiting. My clinic reckons to do any work which comes to it, but we do no visiting outside the factory, except (1) to those employees between the ages of 14 and 16 who have no panel doctor, and who ask us to visit them when they are unfit for work; (2) the visiting done by the nurse, which is more in the nature of social than medical work.

The largest proportion of work coming to my department is very similar to that done in a casualty department of a hospital. Much of the work is surgical in type and minor in nature—cuts, bruises, sprains, septic conditions, boils—but there is no limit to the severity of the conditions seen. I keep an emergency bag, and am always ready to do any necessary emergency operation in the factory. Several times I have stood by while a machine was taken to pieces in order to release a worker who was trapped in it and badly injured. Such happenings are, however, emergencies, and we are not fitted to deal with these major injuries throughout their course; we have, therefore, our own ambulance, and we can have any case into hospital within five minutes. On the other hand, moderately severe injuries, such as fractures and lacerated tendons, are not uncommon.

THE MORNING AND ITS VICISSITUDES

By the time I arrive, about 9 A.M., my clerk has a list of all the people who have asked to see us, and we proceed to send for them. We get them in small batches, and this has to be carefully organised, because we do not want to waste the employees' and the firm's time by keeping people waiting unnecessarily; on the other hand, we cannot afford to be kept waiting ourselves, because we may have 100 or 150 patients to see, and we always get through this list before dinner-time. By so doing we leave the afternoon free for redressings, accidents, those people who may be taken ill for medical reasons, and for all the other work which we do, and which I shall describe later. Some of the cases will be surgical, some medical, some new, and some we have seen on the previous day. We treat all medical cases which come to us, provided they are fit enough to stay at work, and we do our own dispensing. We make a small charge to recover the bare cost of the drugs used and, with the exception of such things as vaccines, all other treatment is given free.

So my morning is spent. Perhaps it sounds fairly straightforward and simple; sometimes it is, and sometimes it is the very reverse. The average doctor in practice works more or less to his own time, and is almost completely his own master; in industry, on the other hand, production is always the master, and is ruthless in calling the tune. The work may be done in a constant series of interruptions and inquiries—perhaps about subjects which have only a faint relation to medicine—and one needs much patience and tact. My department has four telephones, and there are times when all of them seem to ring all day long. It can be very exasperating to have to break off in the middle of an examination of a chest to answer a telephone inquiry as to the food value and the metabolism of some article, when the information required is only wanted for advertising purposes. Again, the finest organisation in the world can break down and become chaos simply because several accidents have happened about the same time and have to be treated at once, in spite of the fact that a batch of patients we have just sent for have to be kept waiting. Then the great god of production is held up, and many are the questions which have to be answered. Remember that British industry is fighting for its life, and everything depends on a high output.

The department is kept open during the dinner hour by sending the nurses off in relays; this is done because the workers go to dinner at different times, and because many of them have dinner in our own canteen. The afternoon is taken up by all that other work which has to be done. The jobs are many and varied, and I will describe them briefly.

VOCATIONAL AND OTHER EXAMINATIONS.

All applicants for employment are examined. This does not mean that only absolutely fit workers are taken, but rather that many with physical defects are accepted and their owners placed on the work which they can do. This vocational placing can only be done if the doctor has a very detailed knowledge of the various jobs on which the workers are to be put. A record card is made at the time of the examination, and every visit the employee subsequently makes to the department, with all the necessary information, is entered on that record. Obviously, this vocational selection would rapidly become useless unless every worker passed through the department's hands every time his work was changed. In practice this is done; although the workers do not always have to be re-examined, because it is sometimes possible to tell if they are suitable by reference to their records.

There are, too, many special examinations which have to be made. I keep a list of between 50 and 60 of our higher executives, for whom I do a complete overhaul every 6 or 12 months. The firm believes in prevention, and as these men and women are most important to them, they believe it pays to recognise and treat illness in its earliest stages. This is the whole idea behind the employment of a medical staff; such attention is not given for philanthropic motives, and these purely preventive examinations are illustrations of modern business methods.

Other examinations we do are (1) monthly weighing, questioning, and, if necessary, examination of all cases of tuberculosis which have come back to us after treatment. These cases may be kept on a monthly list for many years, depending on their progress, and are subsequently transferred to a three-monthly list; later, possibly, they are taken off that too. To show the value of this list, I would mention the case of one of my patients who was in a sanatorium in 1913, and from then has been seen periodically, in spite of the fact that he has had no return of positive symptoms. Last year he developed a cough with a positive sputum, and is now back in a sanatorium. (2) After an interval of about six months we re-examine many of the children who have come to us at 14 years of age. Many of them we recognised as having some defects when they came originally, and some of them we find have developed further defects at the end of this period. A large proportion of these children have not reached puberty when they come to the firm, and I think there can be no doubt that their health can be made or marred in the first few years of their industrial life. At the end of six months most of them are well established in their new life, and will continue to do well without fuss, but there are others who need careful watching. (3) Examination of those workers who have some health hazard peculiar to the industry. We have some who are working in fairly high temperatures, where the relative humidity is high, and where there is a good deal of noise. In the case of adult women and young workers of both sexes I regard this as a hazard, and I examine periodically. (4) Some workers are sent to us because they are not doing well at their jobs, and we have to find whether there is any medical reason for the failure. Frequently there is, but it is only arrived at after much searching, and I often feel that a training in psychology would be a great help to the industrial doctor. The reason for any particular patient's failure to adapt to his ordinary life may be deep-lying and far removed from his work, but the result is always seen in his work in the long run, and then becomes vital to him. I am sure that many of us these last few years will have noticed more and more failures of adaptation, with their concomitant nervous symptoms. (5) Insurance examinations for those workers who have been injured and are receiving compensation.

THE DOCTOR AS INDUSTRIAL EXPERT

In addition to these examinations there is work to be done in the factory itself. I am sometimes consulted about the lay-out of new plant, and I am asked what particular type of worker will be needed for a new job—e.g., men, youths, adult women, boys, or girls—and what are the special qualifications necessary. I keep an eye on the ventilation, heating, and lighting of the rooms, and not infrequently I carry out tests, either to satisfy myself or because I have had a complaint about a room. It is essential that one must know how to use a kata-thermometer and a photometer. In addition, I am asked multitudinous questions by the management about every conceivable subject which has, or is thought to have, some medical aspect.

In our quieter moments we try to do some detailed investigations into subjects which are causing us some anxiety—such as sickness rates and the causes of lost time, with particular reference to dysmenorrhœa and functional nervous conditions. But the time available is usually all too short or is interrupted before the study has begun. In industry one has to be prepared to do anything at a moment's notice, and to do it quickly. We once did over 500 vaccinations in two days, in addition to our ordinary work, because there had been a case of small-pox in the factory. We felt that many cases of the disease in a food factory would mean ruin to the firm, and we vaccinated every possible contact. Happily we had no more cases.

During the last ten years I have been with the firm we have had 364,515 patients through my department, giving an average of 36,451 annually. These patients came entirely of their own accord, and it is only in exceptional cases—e.g., infectious or contagious diseases—that any pressure is brought to bear on them.

THE CHOICE OF THIS CAREER

It might be asked whether I would advise industrial medicine as a career. I should have to give a qualified answer. The hours are good; I work from 9 A.M. until about 5.45 P.M. or 6 P.M., and I have no night work to do and I am free on Saturdays and Sundays. I suppose the hours are about the same as those worked in the public health service, but undoubtedly the security is not so great. In industry there seems to be little security for medicine; the science is a new one to them and is not admitted by all industrialists to be a paying proposition. There is therefore no guarantee that any particular firm will continue to employ a doctor, nor is there any guarantee that a firm will continue to be prosperous enough to employ sufficient people to make the services of a full-time doctor necessary. The work itself is very interesting, but to do it well I think a man should be interested in something more than medicine as a science; the number of cases we see of real scientific interest is not great, but one has to deal with many very interesting things, and I personally have acquired some knowledge at least of many interesting people. Industry itself, with its modern methods of efficiency, is an absorbing subject, and is never without its thrills and changes. In a word, I would not advise a doctor to go into industry permanently unless he is prepared to take a risk; for a young man it would not be without interest for a few years, and would certainly help him to get an intimate knowledge of his fellow-men.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdr. J. F. Ainley is placed on the retd. list at his own request.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Sub-Lts. E. G. Brewis, P. M. Coats, and G. J. Murray to be Surg. Lts.

Proby. Surg. Sub-Lt. S. I. Ballard to be Surg. Sub-Lt.

ROYAL ARMY MEDICAL CORPS

Lt.-Col. A. T. Frost retires on retd. pay.

Maj. A. B. H. Bridges is placed on retd. pay.

Maj. W. H. S. Burney to be Lt.-Col.

TERRITORIAL ARMY

Capt. T. C. McKenzie to be Maj.

Lt. E. M. R. Frazer to be Capt.

G. M. Goodwille (late Cadet, Edinburgh Univ. Contgt., Sen. Div., O.T.C.) to be Lt.

A. MacDonald (late Cadet, George Watson's Coll. Contgt., Jun. Div., O.T.C.) to be Lt.

INDIAN MEDICAL SERVICE

Capts. D. G. Karandikar and T. P. Rao relinquish their temp. commns.

ROYAL AIR FORCE

Flying Officer D. C. MacGilchrist is promoted to the rank of Flight Lt.

The undermentioned are granted permanent commissions in the ranks stated: Flight Lt. C. A. Rumball and Flying Officers O. M. Fraser and A. M. Weston.

Dental Branch.—The undermentioned Flying Officers are promoted to the rank of Flight Lt.: J. G. Stewart and J. J. Lawson.

HARLOW WOOD ORTHOPÆDIC HOSPITAL.—Although this Nottinghamshire hospital was opened only three years ago an enlargement, which will cost between £12,000 and £13,000, is already necessary. Last week the first sods were cut by the Duchess of Portland, the president, a colliery owner, and a miner who had been unable to walk for ten years but was completely cured in the hospital.

PANEL AND CONTRACT PRACTICE

Certification in Pregnancy and Post-confinement

THERE is considerable misunderstanding on the part of both insurance practitioners and approved societies as to the conditions under which benefit is properly payable during pregnancy and after confinement. The Ministry of Health in Memo. 324/A.I.C. point out that pregnancy is not sufficient in itself to entitle an insured woman to any cash benefit under the National Health Insurance Act. Sickness or disablement benefit can only be paid in respect of a period during which a pregnant woman is incapable of work. A normal, uncomplicated pregnancy would not ordinarily involve incapacity for work, though during its latest stages or in exceptional circumstances a woman might become incapable. A doctor is therefore debarred from giving a medical certificate in order to enable benefit to be claimed unless he is satisfied, as a result of an examination of the woman, that she is incapable of work. After the puerperium (of four weeks) a woman is not entitled to sickness or disablement benefit unless her physical or mental condition is such that she can properly be certified as incapable of work within the meaning of the National Health Insurance Act.

These statements sum up the position clearly, but it is easy to see how difficulties occur. Mrs. A walks into her doctor's surgery, asks for a certificate to go on the panel, stating that she is pregnant. Probably she adds one of the following reasons for her request: "My employers won't have me at work"; "I can't do my work any longer"; "My agent told me to get a certificate from you"; "My friend Mrs. B went on the panel when she was pregnant and I do not see why I should not go on too"; or "Dr. X gave my friend a certificate without any difficulty, and if you don't give me a certificate I shall change my doctor—the agent said I was to get a certificate." This last threat, of course, involves possible loss of confinement fees as well as panel fees, and probably private attendance on the non-insured part of the family—quite a serious consideration to many doctors. How is he to deal with the situation? The first thing to do is to examine the patient and to ascertain (1) the stage of pregnancy; (2) the kind of work; (3) the presence or absence of any physical defects, such as bad varicose veins, piles, œdema of legs, albumin in urine, excessive vomiting. If one of these disabilities are found a certificate can properly be given. If the pregnancy appears to be quite normal, but in its late stages, the kind of work will need special consideration. If before becoming pregnant she was a waitress, the question arises whether she can now act as a waitress without doing herself harm. If the doctor thinks she can, he should refuse a certificate even if she says her employers will not have her back. An exception to this rule is in Class K cases, where a woman marries and leaves off work but continues in benefit for a further year or more; here it becomes necessary to judge her capacity for work when pregnant from the standard of housework. Can she perform without harm ordinary daily household duties? Probably it is only in the very late stages of normal pregnancy that a woman will be unfit to do such work at her own rate, in her own way, though she might be unable to work away from home where she could not rest during the day.

The reason often given for demanding a certificate, that the employer will not have the pregnant woman back at work, is irrelevant to the payment of sickness benefit. If a woman is not incapable of work and her work is not unsuitable to her state, and yet the employer will not have her back, it is advisable for the doctor to write her a private note on a sheet of paper setting out the position. The approved society will then have the onus of deciding, as they do in cases like scabies or impetigo on the face, whether to pay benefit or not. Such cases are not legally incapable of work. On the other hand, the woman who says "I cannot do my work any longer," often has either some additional incapacity or some occupation which involves much stooping or bending, and these patients require careful examination.

To doctors the most annoying statement a patient can make is that she was told by the agent of her society she was to get a certificate. This has led to much acrimonious talk between doctors and societies, but it is quite easy to see what happens. The agent of the society cannot say yes or no to a question whether a woman is entitled to sick pay. What he does say, often under instruction from his head office, is, "You must get a certificate from your doctor." This phrase is interpreted by the patient to mean that the doctor is bound to give a certificate, and this is what she tells the doctor. Thus a situation which causes much irritation and administrative difficulty all round is really due to a mistake in the interpretation of words not easy to avoid among uneducated people. Sometimes doctors use expressions which patients interpret incorrectly, such as "I will give you a certificate so that you can get your money," or "Take this certificate to your secretary, he will pay you then." The patient assumes that the doctor knows what is due to her, though the agent or secretary may be under orders from head office to stop payment for some administrative infringement or other reason unknown to the doctor.

It is not unknown, however, for agents to go round advising women to claim when pregnant, and then advertising the successful claims in order to encourage recruitment of new members. Fortunately this is not a common proceeding, and most of the bigger societies have given definite instructions to their agents in order to remove any erroneous impression. The real cause of difficulty in competitive areas is a threat of change of doctor. A tired doctor may protest that he can ill afford to risk losing private cases, confinement fees, as well as panel fees, in order to carry out the letter of an Act of Parliament run by a Minister who is always worrying him about records and prescriptions in order to save the funds of some approved society whose officers rarely have a good word to say for his work. It is easy for him to believe that a patient feels much worse than her physical signs show, and to convince himself that it would be wrong to refuse to put her on the panel. In time of course a doctor will realise that a weak attitude leads to panel slavery, and that patients will not retain much respect for a doctor who does not hold to his own judgment in these matters. These cases can usually be handled tactfully so that the doctor gets his own way and the patient is nevertheless satisfied. If the incapacity really is in doubt the case can always be referred to the regional medical officer for a report.

The certificate of post-confinement cases is not so difficult. For four weeks after her confinement she gets maternity benefit and is not eligible for sick pay or disablement benefit. After this period she is not entitled to such benefits unless she is certifiable as incapable of work. In this case a first certificate should be given and not an intermediate one. The commonest causes of such incapacity are backache and anæmia.

The certification of pregnancy cases has given rise to much discussion in approved society circles as well as in medical committees. It has been suggested that no sickness pay should be given during pregnancy, but that a larger maternity benefit should be paid in its place. This would be rather hard on the woman who broke her arm when pregnant, and required funds to help finances to carry on. Again, it has been suggested that sickness pay should only be given for those ailments which are not connected with pregnancy, an almost impossible position for any doctor to determine. The matter is certainly very important. It has recently been brought to the notice of the panel committee for London by the organising assistant secretary in his quarterly report, and not for the first time.

Surcharging

In THE LANCET of Jan. 14th we expressed agreement with the Glasgow critics that "it is a pity there have been no cases of investigation of under-prescribing." By this we intended to convey that there had been no cases tried by panel committees where the charge was under-prescribing as distinct from over-prescribing. But we are informed, and are glad to point out, that regional medical officers do interview practitioners whose average is definitely below the general average. It is usual to find such cases either in country areas where the doctor is a dominating personality, who has little faith in the efficacy of drugs, or in areas in London, like Soho, where a large foreign population does not readily take medicine. Another type of practice where the average is low is that attached or connected with some industrial firm who habitually send their cases to hospital rather than to the panel doctor. It is obviously difficult to prove that a doctor is not giving sufficient medicines, even though his prescriptions may be well below the real average, and that is probably why no cases have yet been taken as far as a panel committee for investigation.

CORRESPONDENCE

MASKED HYPERTHYROIDISM

To the Editor of THE LANCET

SIR,—Dr. J. R. H. Towers is to be congratulated on his paper on Masked Hyperthyroidism and Heart Disease in your issue of Jan. 14th. Those of us who are especially interested in thyroid problems are frequently confronted with the sort of case Dr. Towers describes in which certain phenomena such as tachycardia, wasting, nervousness, and tremor are present, but the thyroid gland is not visibly enlarged.

Dr. Towers, I am sure, does not need to be reminded that many goitres not visible are nevertheless palpable owing to their abnormal consistence, or to the fact that in a muscular neck a thyroid gland of two to three ounces in weight may not be visible, yet if the muscles are relaxed it may be felt. It is also true that the thyroid gland may be enlarged, yet neither inspection nor palpation, even by those skilled in this branch of medicine, reveal the fact. The normal thyroid gland weighs in the young adult, when it is at its maximum size, about four-fifths of an ounce, but a gland twice or even thrice this weight may be neither visibly nor palpably enlarged. Where Dr. Towers might, I think, enlighten us further is by giving details of the weights of thyroid tissue removed in those cases submitted to operation, and also by informing us as to the histological structure of the extirpated tissue. This would help to solve the problem whether thyrotoxicosis ever occurs with a thyroid gland which is normal in size or normal in structure, or both. I am convinced that the contrary proposition is true—viz., that thyrotoxicosis never occurs in association with a thyroid gland which is normal in size, still less in one which is normal in structure.—I am, Sir, yours faithfully,

Harley-street, W., Jan. 24th, 1933. CECIL A. JOLL.

THE MIGRATION OF "MALTA FEVER"

To the Editor of THE LANCET

SIR,—In the discussion on Prof. W. E. Hume's paper on Undulant Fever at the Royal Society of Medicine on Jan. 24th, I submitted that undulant fever was new to Malta when first heard of in the fleet in 1856, and Dr. E. W. Goodall asked where it had been before that. Perhaps you will let me answer now—in South Russia. Surgeon Captain S. F. Dudley tells us it was then new to the fleet, and there is no trace of it among the diseases of Malta recorded by that careful physician, John Hennen, in medical charge there from 1821–25. An expedition was made to Kertch, at the foot of the Sea of Azof, during the Crimean War, and troops returning thence to Malta, on board men-of-war, seem to have infected the ships, and perhaps the island. It is doubtful if any reports of this disease were made from South Russia before the Great War, but several have appeared since, from Baku,[1] from Batoum[2] and from Rostoff, at the upper end of the Sea of Azof in 1931.[3] Brucella septicæmia is clinically so indefinite in men that it is not likely to be diagnosed unless attention is specially directed to it. It was recognised at Rostoff in 1925, but epidemic abortion of cattle it was caused particular concern. The first human *abortus* case was at last recognised in a veterinary surgeon, for three years concerned with epidemic abortion (loc. cit., ref. 3, p. 237).

Br. abortus and *melitensis* fevers—they seem scarcely distinguishable—are widely spread. We heard on the 24th that they are notifiable in France and Germany, cases are always being reported in new places; Prof. Hume told us of 17 unexpectedly found in the North of England, and Surg.-Lieut. Commander S. G. Rainsford[4] says that 20 per cent. of normal serums in Ireland agglutinate *Br. abortus*. So this septicæmia is almost as widespread, if not so virulent, as appendicitis, of which hardly anyone had heard 50 years ago. And other diseases have been known to migrate—yellow fever from West Africa to the West Indies, and in 1848 to South America (Bahia); malaria to Mauritius from India. Cholera, plague, and influenza migrate quite commonly, syphilis recently invaded Uganda, sleeping-sickness and chigoe were brought from West to East

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[1] THE LANCET, 1924, i., 963.
[2] Ibid., 1930, ii., 671.
[3] Arch. f. Schiffs- u. Tropen-Hyg., 1931, xxxv., 81, 237.
[4] Brit. Med. Jour., Jan. 28th, p. 147.

OBITUARY

SIR WILLIAM TAYLOR, K.B.E., C.B., F.R.C.S.I.

REGIUS PROFESSOR OF SURGERY, UNIVERSITY OF DUBLIN

WE regret to announce the death of Sir William Taylor, Regius professor of surgery in the University of Dublin, which occurred suddenly on Sunday last, Jan. 29th, in the sixty-second year of his age. He had shown no signs of illness, and the news of his death came as a shock to his friends.

Sir William Taylor was born in Donegal and was educated at the Strabane Academy, the medical schools of the Irish Royal Colleges, and the University of Dublin. He qualified with the double diploma of the colleges in 1893, having proved himself a distinguished student by securing the gold medal in operative surgery and the Mayne scholarship. Later, at the University of Dublin, he graduated in Arts and took the M.B. degree in 1901, having previously secured the F.R.C.S. Irel. In 1898 he was appointed assistant surgeon to the Meath Hospital, where he had formerly been interne, and two years later full surgeon to the institution. He was consulting surgeon to this hospital at the time of his death, so that he had given it life-long service. He soon established a well-earned reputation as an operating and consulting surgeon, and some of his experiences formed the subject of valuable communications to the *Transactions* of the Royal Academy of Medicine in Ireland and to the *British Medical Journal.* Elected to the Council of the Royal College of Surgeons in Ireland in 1914, he became vice-president, and two years later president, his term of office coinciding with the middle period of the war. On the outbreak of the war he was appointed, with the rank of colonel A.M.S., consulting surgeon to the Forces in Ireland, a position which he held for six years. He was one of the surgeons to the Dublin Castle Red Cross Hospital, and in 1917, at the request of the War Office, he organised a hospital in France, selecting the staff from men too old for ordinary service. The staff consisted almost entirely of members of the visiting staffs of the Dublin hospitals, every hospital being represented, and the " 83 (Dublin) General Hospital " at Boulogne did admirable work at the closing period of the war. Taylor himself spent three months at the hospital, and his energy and skill were recognised with the C.B. in 1917 and the K.B.E. in the following year. Since that time his deep concern for the condition of ex-Service men has been expressed in many directions, and he was a notable figure among the group of Irishmen who went to Belgium and France to unveil memorials to their dead countrymen.

SIR WILLIAM TAYLOR

[*Photograph by Elliott and Fry*

In 1923 Sir William Taylor became surgeon to Sir Patrick Dun's Hospital, in succession to Prof. Edward Henry Taylor, whom he also succeeded in the Regius professorship, the chair which he was occupying at the time of his death. He recently visited Canada and the United States and was received there warmly, the University of McGill making him an honorary LL.D., and the American College of Surgeons an honorary fellow. He was president of the Association of Surgeons of Great Britain and Ireland in 1924-25, and was elected president of the Royal Academy of Medicine in Ireland in 1927. In addition to his posts at the Meath Hospital and Sir Patrick Dun's Hospital, he was consulting surgeon to the Coombe Lying-in Hospital, the Steevens Hospital, and the Dental Hospital of Ireland. He was a D.L. for the county of Dublin, and held high rank in the Masonic Order. Few men can have combined so many important posts or acquitted themselves in their multifarious obligations with greater ability.

Sir William Taylor married, in 1898, Katharine, daughter of the late Dr. Hamilton Walker, and is survived by one daughter and three sons.

Our Dublin correspondent writes: " William Taylor was not only a leading surgeon in Dublin, but he was one of the outstanding personalities in the profession. Clear-headed, forcible, direct, he had made his way by his natural gifts of intelligence and character. As a surgeon he was careful in his diagnosis and confident in his judgment; in operation cool, quick, resourceful. Such a thing as 'nerves' was unknown to him. It was characteristic of him that he chose to perform major operations on his own family rather than refer them to other surgeons. As a teacher he was clear, precise, and entertaining. In public professional affairs he took a leading part, and his qualities of common-sense, quickness of understanding, and directness were of great value in shortening many a discussion and in expediting business. He had strong likes and dislikes, and he took no trouble to conceal either."

WILLIAM BLACK JONES, M.D. Lond.

William Black Jones, whose death is announced in Cardiff on Jan. 27th, at the age of 68, was well known in connexion with medical hydrology. He received his medical education at St. Bartholomew's Hospital, and qualified with the English double diploma in 1892. He graduated in the same year as M.B., B.S. in the University of London with honours in obstetrics and surgery, and acted as house surgeon and assistant in the throat department at St. Bartholomew's. He proceeded to the M.D. degree in 1894, and shortly afterwards began a long connexion with the Spa at Llangammarch. The waters of this spa contain barium to a somewhat unusual extent, and the fact was brought to the attention of the medical profession by Lauder Brunton, who suggested that the therapeutical properties of barium might be employed with advantage in certain cardiac disorders. Accordingly a considerable study of the matter was made at Llangammarch by various experts, but the spa, however, now relies for its reputation on the value of its mild saline waters in digestive catarrhs. While at Llangammarch Black Jones made some interesting meteorologic studies; one upon the measurement of sunshine at our health resorts attracted considerable attention, bringing home to the medical profession in England that they were behind their continental brethren in demonstrating the amenities of their own health resorts.

Dr. Black Jones had retired from practice when he died. In addition to his post at Llangammarch, he was at one time M.O.H. for the combined Builth Wells and Colwyn urban and rural districts, and J.P. for Brecon. He was consequently a well-known man, and his death is widely regretted.

CHRISTOPHER MARTIN, M.B. Edin., F.R.C.S. Eng.

WE regret to announce the death of Mr. Christopher Martin, the well-known gynæcologist, which occurred at his residence at Edgbaston, Birmingham, on Jan. 28th, after a long period of indifferent health.

Christopher Martin was born at Stockton-on-Tees in 1866 and educated at the Middlesbrough High School, whence he proceeded to the University of Edinburgh. Here he graduated M.B., C.M. in 1887, with first-class honours. He became resident surgeon at the Royal Maternity Hospital, and was for a time demonstrator of anatomy at the Edinburgh School of Medicine. He continued his studies at St. Bartholomew's Hospital and took the F.R.C.S. Eng. in 1891, having already formed his valuable professional connexion with that forceful curious character, Lawson Tait.

MR. CHRISTOPHER MARTIN

[*Photograph by Beaufort*

Christopher Martin had been introduced to Lawson Tait by Sir A. R. Simpson, whose house surgeon he had been in Edinburgh. Tait, some 20 years previously, with the vigorous coöperation of Mr. Arthur Chamberlain, and in the face of opposition from the Birmingham General and Queen's Hospitals, had founded in Birmingham a special hospital for women. To this hospital, now the Midland and Birmingham Hospital for Women, Martin was appointed assistant surgeon, and shortly afterwards entered into partnership with Tait, of whose professional and social life he later wrote an interesting record which was recently reviewed in our columns (THE LANCET, 1932, i., 1264). Tait's was a meteoric career, and his surgical prowess, which brought him so swiftly to the top, failed to sustain him there. Shortly after Martin joined him Tait resigned his many important appointments and retired into private life. But by this time Martin had secured by his own good work a high place in his special department of medicine. He was appointed assistant to the professor of gynæcology in Queen's College, Birmingham, and gynæcologist to the Birmingham General Dispensary, and the experiences of his large practice, institutional and private, were put out in practical papers on abdominal surgery and gynæcology, some of which were published in our columns, notably one on the treatment of myomata. He was one of the first in England to perform a total hysterectomy, and was successful also in extensive plastic operations for advanced cases of carcinoma involving the whole vagina. In 1902 he delivered the Ingleby lectures at the University of Birmingham upon the retention of the menses, and shortly afterwards became president of the Midland Obstetric and Gynæcological Society. Increasing calls upon him made no difference to his abiding interest in the Hospital for Women, with the progress of which he had been bound up since his first appointment to the institution more than 40 years ago, and it is in this connexion in particular that he has established a claim to permanent recollection in the city. He was one of the first fellows of the British College of Obstetricians and Gynæcologists.

Christopher Martin was married in 1920 to Miss Mary Clarke, M.B., Ch.B. Birm., who had been anæsthetist to the Hospital for Women, and held other medical appointments in Birmingham hospitals. He is survived by his widow.

Mr. Frederick Edge, a personal friend of 40 years' standing, writes: "On Christopher Martin's arrival at Birmingham with his mother I became acquainted with her to whom he always admitted how much he owed. He lived with her when he was a student in Edinburgh, while she possessed a wide knowledge of medical affairs, acquired as matron of the Middlesbrough Hospital, a post which she obtained when she was left a widow. The devotion of mother and son was striking. . . . On the many journeys which I made abroad, to France and Belgium, with Martin and other medical friends, he was a great guide, always producing excellent maps and notes on all points of historic interest, so that we came back carrying bags bursting with articles collected by the way. Martin could never do enough to please and entertain the party, and he always brought the tools necessary to remove the appendix of anyone who should require his assistance. The suffering of the incurable always aroused Martin's particular pity, and he was associated with the late Prof. Taylor in instituting the Taylor Memorial Home for Incurables, of which institution he was chairman until the end of his life. He always thoroughly enjoyed the renewal of old friendships, and with Dr. Douglas Stanley originated in Birmingham an Edinburgh Graduates' Dinner. He was chairman of the Gertrude Myer Home for Convalescents, and he enjoyed the organisation of picnic excursions for nurses and students. His was a truly generous nature."

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 21ST, 1933

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 16 (last week 18); scarlet fever, 1950 (last week 1739); diphtheria, 821; enteric fever, 12; acute pneumonia (primary or influenzal), 3781 (last three weeks 2017, 2816, and 3456); puerperal fever, 27; puerperal pyrexia, 139; cerebro-spinal fever, 61 (last two weeks 38 and 47); acute poliomyelitis, 2; acute polio-encephalitis, 1; encephalitis lethargica, 10; dysentery, 6; and ophthalmia neonatorum, 75. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Jan. 24th–25th was as follows:—Small-pox, 40 under treatment, 4 under observation (last week 48 and 3 respectively); scarlet fever, 1676; diphtheria, 1612; enteric fever, 9; measles, 270; whooping-

Dr. John Harry Hebb, C.B.E., has been appointed Director-General of Medical Services in the Ministry of Pensions, in succession to Sir Lisle Webb. Dr. Herbert Lightstone, D.S.O., will succeed Dr. Hebb as Deputy Director-General.

Society of Chemical Industry

At a meeting of this society to be held at 8 P.M. on Monday, Feb. 6th, in the Chemical Society's Rooms, Burlington House, London, W., Dr. E. C. Dodds, Courtauld professor of biochemistry in the University of London, will read a paper on Hormones.

St. George's Hospital

The medical school committee will hold a post-graduate course for old St. George's men from noon on Friday, Sept. 29th, to noon on Monday, Oct. 2nd, 1933, and a small committee has undertaken the arrangements. No details have been worked out yet, but the course will consist of lectures and demonstrations, chosen to meet the needs of general practitioners. The course will be followed on Monday, Oct. 2nd, by the general meeting of the school for the annual prize-giving and dinner, and a week-end ticket will cover the programme.

Ideas and suggestions from old St. George's men should *be sent to Dr. Anthony Feiling, dean of the medical school.*

Research Fund for Mental Disorders

Through the medium of the council of the British Medical Association, Mrs. R. G. Burden, of Clevedon Hall, Clevedon, Somerset, warden of the National Institutions for Persons Requiring Care and Control, has announced her desire of making available for the encouragement and prosecution of research into mental problems and disorders the sum of £10,000. It is the donor's desire that the present director of medical services at Stoke Park Colony, Stapleton, Bristol (*Prof. R. J. A. Berry*), *shall be in a position of responsibility* with regard to the research work to be undertaken. In view of the national importance of such research active steps are being taken to form a committee of management and direction fully representative of the public interests.

Fellowship of Medicine and Post-Graduate Medical Association

The fourth lecture in the series on practical problems in medicine and surgery will take place at 11, Chandos-street, Cavendish-square, London, W., at 4 P.M. on Tuesday, Feb. 7th, when Mr. Martin *Oldershaw will lecture on the* Significance of Bleeding as a Symptom in Gynæcology. A course of eight demonstrations on the Interpretations of Pyelograms is being given by Dr. G. R. Mather Cordiner, beginning on Wednesday, Feb. 8th, at 8 P.M. There will be a week-end course in physical medicine at the London Clinic and Institute of Physical Medicine on Saturday, Feb. 11th, and Sunday, Feb. 12th, when all-day instruction will be given. Forthcoming courses include an evening course at the National Temperance Hospital, Feb. 20th to March 17th; a course in medicine, surgery, and the specialties at the Prince of Wales's Hospital, Feb. 20th to March 4th; and in practical pathology at the Brompton Hospital, Feb. 20th to March 4th. All courses, lectures, and demonstrations arranged by the Fellowship are open only to members and associates. Further particulars may be had from the Secretary of the Fellowship at 1, Wimpole-street, London, W. 1.

Grants for Research

The trustees of the Ella Sachs Plotz Foundation are anxious to make known the resources of their fund for the advancement of scientific investigation. The Foundation seldom or never offers stipends to investigators, nor does it provide apparatus and materials which are ordinarily part of laboratory equipment. Its special purpose is to give grants for the purchase of apparatus and supplies needed for special investigations and for the payment of unusual expenses incidental thereto, including technical assistance. At present research is favoured which bears on medicine or surgery, and the trustees endeavour to assist workers in various countries who are trying to solve identical or related problems. Thus a considerable number of grants have been made in the last few years for studies on nephritis, while internal secretion and infection have also [illegible] not to so great a degree. In the [illegible] nce the Foundation has made 179 [illegible] have been aided in 23 countries. The [illegible] ranged from 100 to 500 dollars each. Applications for assistance during the coming year should arrive before May 1st, including statements about the nature of the research, the amount of money wanted, and the objects on which it will be spent. The secretary of the executive is Dr. Joseph C. Aub, Corliss P. Huntington Memorial Hospital, Boston, Mass., U.S.A.

The New Freemasons' Hospital

The report for 1932 presented to the annual meeting last week stated that although the dedication-stone of the new building at Hammersmith was laid only in May last by the Duke of Connaught, and a new wing has since been decided upon, the whole of the structure has been completed, along with the lighting and warming, and the interior work is well on the way to completion. The scheme has twice been enlarged, first from 120 to 144, and now to 180 beds. During the past year 687 patients passed through the present hospital in the Fulham-road, 329 of whom were a charge on the Samaritan Fund, against the previous highest figure of 270. Of this number 13 were cases from overseas, one being sent by aeroplane from Khartoum for an urgent operation. Although there have been many extras in connexion with the new building, the contract figure of £313,000 has not been exceeded. The new building will, it is expected, be open for the reception of patients in September or October.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Feb. 7th.—5.30 P.M., ORTHOPÆDICS. (Cases at 4.30 P.M.) Demonstration. Mr. E. I. Lloyd: Tilting Table for a Hip Operation in Children. Cases. Mr. G. R. Girdlestone: 1 and 2. Unusual Abnormalities of the Body of the Vertebræ. Mr. J. M. Turner: 3. Dyschondroplasia. 4. Hæmophilia with Tuberculous Abscess in Abdominal Wall and Arthritis of Hip. 5. Hæmangiectatic Hypertrophy of the Calf. Mr. C. Lambrinudi: 6. Pes Calcaneus. Mr. Philip Glynn: 7. Fractured Neck of the Femur treated with Smith-Petersen Pins. Mr. A. Rocyn Jones: 8. Madelung's Deformity. Other cases will be shown. 8 P.M., PATHOLOGY. Laboratory Meeting at the Lister Institute of Preventive Medicine, Chelsea Bridge-road, S.W.

FRIDAY.—5.30 P.M., CLINICAL. (Cases at 4.30 P.M.) Cases. Mr. H. A. T. Fairbank: 1. Congenital Enlargement of One Arm. Mr. J. P. [illegible] Epithelioma of Anus [illegible] H. H. Woollard: 4. My[illegible] X Rays. Mr. Harol[illegible] Pouch. Dr. H. S. St.[illegible] Dr. Francis Bach: 7 [illegible] successfully treated. Dr [illegible] Enlargement of Parotid Glands of 16 years' duration, with Xerostomia. 10. Chronic Enlargement of Parotid Glands with Intermittent Exacerbations. 11. Chronic Œdema of Legs, with large Turgid Hands. 12. Dystonia Musculorum, probably of Encephalitic Origin. Dr. H. V. Morlock: 13. Chronic Spontaneous Pneumothorax treated by Intrapleural Injection of Silver Nitrate. 14. Repeated Hæmoptysis caused by *a Benign Bronchial Neoplasm.* Dr. G. Gregory Kayne: 15. Retrosternal Goitre and Amyotrophic Lateral Sclerosis. Other cases will be shown. 8.30 P.M., [illegible] apers. Miss Ida Mann: On [illegible] Membranes on the Posterior [illegible] Mr. J. Cole Marshall: Safar's [illegible] of Detachment of the Retina with Diathermy. Mr. N. Bishop Harman: A New Hand Slit-lamp. Mr. J. Foster: Method of Transferring Scotomata and Fields from a Scotometer Chart to a Perimeter Chart.

SOUTH-WEST LONDON MEDICAL SOCIETY.

WEDNESDAY, Feb. 8th.—9 P.M. (at the Bolingbroke Hospital, Wandsworth Common), Dr. A. Moncrieff: Coughs in Childhood.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, Feb. 10th (at the Miller Hospital), Mr. P. H. Mitchiner: Should One Wait and See in Acute Appendicitis?

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY, 11, Chandos-street, Cavendish-square, W.

THURSDAY, Feb. 9th.—8.30 P.M., Dr. W. J. O'Donovan: Pathomimia Cutanea.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

MONDAY, Feb. 6th.—5 P.M., Mr. H. P. Winsbury-White: Paths of Infection between the Genital Organs and the Urinary Tract. (Hunterian lecture.)

WEDNESDAY.—5 P.M., Mr. Stanford Cade: Radiation Treatment of Cancer of the Mouth and Pharynx. (Hunterian lecture.)

FRIDAY.—5 P.M., Mr. H. J. Burrows: Tissue Culture in its Relationship to Surgical Pathology. (Hunterian lecture.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.

MONDAY, Feb. 6th, to SATURDAY, Feb. 11th.—ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester-square, W.C. Post-graduate Course in Dermatology. Afternoon instruction in the Out-patient Department daily; lectures at 5 P.M. on Tues. and Thurs.—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C. Demonstration on Antenatal Diagnosis and Treatment, by Dame A. Louise McIlroy, 5 P.M. Frid.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. A Course in Gynæcology. Mornings and/or afternoons daily.—HOSPITAL FOR CONSUMPTION, Brompton, S.W. A Course in Diseases of the Chest. All day instruction given.—LONDON CLINIC AND INSTITUTE OF PHYSICAL MEDICINE, [illegible] Course in Physical [illegible] Feb. 12th. All day [illegible] NDON, 11, Chandos-street, Cavendish-square, W. Lecture on the Significance of Bleeding as a Symptom in Gynæcology, by Mr. Martin Oldershaw, on Tues., at 4 P.M. (Free to Members and Associates of the Fellowship.)—FELLOWSHIP OF MEDICINE, 1, Wimpole-street, W. A Series of Demonstrations on the Interpretation of Pyelograms will be given by Dr. G. R. Mather Cordiner Wed. at 8 P.M., and Sat. at 3 P.M.

ROYAL NORTHERN HOSPITAL, Holloway-road, N. (Intensive Week.)

MONDAY, Feb. 6th.—2.15 P.M., Mr. F. D. Saner: Some Aspects of the Treatment of Acute Suppuration. 3.15 P.M., Mr. Frederick Roques: Anæsthetics in Obstetric Practice.

TUESDAY.—2.15 P.M., Mr. McNeill Love: Some Common Diseases of Joints. 3.15 P.M., Dr. Bruce Williamson: Demonstration of Cases (unselected).

WEDNESDAY.—2.15 P.M., Dr. Bernard Schlesinger: Chorea. 3.15 P.M., Dr. Henry C. Semon: The Drug Rashes.

THURSDAY.—2.15 P.M., Dr. A. Lisle Punch: The Value of Lipiodol in Diagnosis. 3.15 P.M., Mr. E. Wolff: Common External Diseases of the Eye.

FRIDAY.—2.15 P.M., Dr. G. R. Mather Cordiner: Radiological Dyspepsias. 3.15 P.M., Mr. E. I. Lloyd: The Semilunar Cartilages of the Knee.

MIDDLESEX HOSPITAL MEDICAL SCHOOL, Mortimer-street, W.

TUESDAY, Feb. 7th, and the following THURSDAYS and TUESDAYS at 5 P.M., Prof. Samson Wright: Physiology of the Nervous Systems (six lectures).

ST. MARK'S HOSPITAL, City-road, E.C.

THURSDAY, Feb. 9th.—4 P.M., Mr. C. N. Morgan: Surgical Anatomy of the Anal Canal and Rectum.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Feb. 10th.—4 P.M., Mr. W. G. Scott Brown: Œsophageal Obstruction.

ST. PETER'S HOSPITAL FOR STONE, Henrietta-street, W.C.

WEDNESDAY, Feb. 8th.—3 P.M., Mr. F. J. F. Barrington: Treatment of Senile Enlargement of the Prostate.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Feb. 7th.—5 P.M., Dr. H. C. G. Semon: Diseases of the Buccal Mucous Membrane.

THURSDAY.—5 P.M., Dr. H. Haldin-Davis: Pruritus. Prurigo. Lichenification.

ST. MARY'S HOSPITALS, Manchester.

FRIDAY, Feb. 10th.—4.15 P.M., Post-graduate Lecture (at the Whitworth-street West Hospital), Dr. Lacey and Dr. Addis: Antenatal Demonstrations.

LONDON JEWISH HOSPITAL, Stepney Green, E.

THURSDAY, Feb. 16th.—4 P.M., Mr. S. I. Levy: Lecture-Demonstration. Enlarged Prostate and its Treatment.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, Feb. 9th.—9 P.M., Dr. Graham Hodgson: The Radiology of the Accessory Nasal Sinuses.

ROYAL INSTITUTE OF PUBLIC HEALTH, Queen-square, W.C.

WEDNESDAY, Feb. 8th.—4.30 P.M., Dr. W. S. C. Copeman: A Scheme for Industrial Rheumatism.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.

WEDNESDAY, Feb. 8th.—4 P.M., Mr. Terence Millin: Endoscopic Diathermy as applied to the Obstructing Prostate.

GLASGOW POST-GRADUATE LECTURES.

TUESDAY, Feb. 7th.—3.30 P.M. (in the Faculty Hall, St. Vincent-street), Mr. A. MacLennan: Post-Hospital Treatment of Deforming Lesions.

WEDNESDAY.—4.15 P.M. (at the Royal Samaritan Hospital for Women), Dr. D. McIntyre: Gynæcological Cases.

Appointments

LEWIS, IVOR, M.D., M.S. Lond., has been appointed Medical Superintendent of the North Middlesex Hospital.

RYCROFT, B. W., M.D., Ch.B. St. And., D.O.M.S., Ophthalmic Surgeon (Second) to the Royal Northern Hospital.

Vacancies

For further information refer to the advertisement columns

Archway Hospital, Archway-road, Highgate, N.—Asst. M.O. £250.

Ayr County Hospital.—H.S. £150.

Bath, Royal United Hospital.—Two Surgeon Dentists.

Birkenhead General Hospital.—Hon. Orthopædic Surgeon. Res. Sen. H.S. At rate of £150. Also Second H.S., H.P., and Cas. O. Each at rate of £100.

Birmingham, Canwell Hall Babies' Hospital.—Res. M.O. At rate of £250.

Birmingham, Selly Oak Hospital.—Cas. O. At rate of £200.

Bolingbroke Hospital, Wandsworth Common, S.W.—Asst. Gynæcologist.

Bootle General Hospital.—H.P., Two H.S.'s, and Cas. O. All at rate of £150.

Bradford Children's Hospital.—H.S. £100.

Bristol General Hospital.—Hon. Asst. Phys.

Cardiff City Mental Hospital, Whitchurch.—Sen. Asst. M.O. £570.

Colchester, Essex County Hospital.—H.P. £150.

Coventry, Coventry and Warwickshire Hospital.—H.S. to Aural and Ophthalmic Depts. At rate of £125.

Croydon County Borough.—Asst. M.O.H. for Obstetrics. £750.

Derby County Mental Hospital, Mickleover.—Deputy Med. Supt. £600.

East Ham Memorial Hospital, Shrewsbury-road, E.—Hon. Surg. to Ear, Nose and Throat Dept. Also Res. M.O. At rate of £200.

East Sussex Public Assistance Committee.—District M.O. &c. for Hove, &c. £60. Also District M.O. for Aldrington, &c. £85.

Edinburgh, General Board of Control for Scotland.—Medical Deputy Commissioner. £726.

Fulham Hospital, St. Dunstan's-road, Hammersmith.—Asst. M.O. £250.

Gloucester County and City Mental Hospitals.—Jun. Asst. M.O. £350.

Gravesend and North Kent Hospital.—Jun. H.S. £100–£150.

Grosvenor Hospital for Women, Vincent-square, S.W.—Chief Asst.

Hackney Hospital, High-street, Homerton, E.—Res. Asst. M.O. £350.

Hampstead General and North-West London Hospital, Haverstock-hill, N.W.—Cas. M.O. for Out-patient Dept. At rate of £100.

Hastings, Royal East Sussex Hospital.—Sen. and Jun. H.S.'s. At rate of £200 and £150 respectively.

Highgate Hospital, Dartmouth Park Hill, N.—Asst. M.O. £250.

Hospital for Sick Children, Gt. Ormond-street, W.C.—H.P. and H.S. Each at rate of £100.

Hull Royal Infirmary.—Third H.S. At rate of £150.

Ilford, [illegible] of £100.

India, [illegible]

Leeds G[illegible] At rate of £100. Also Hon. Ophth. Surgeon.

Leicester Royal Infirmary.—Hon. Asst. Radiologist.

London Hospital, E.—Med. First Asst. and Reg. £300.

London Jewish Hospital, Stepney Green, E.—H.S. At rate of £100.

London Lock Hospital, 91, Dean-street, W.—Surg. Reg. £100.

Manchester, Ancoats Hospital.—Hon. Asst. Phys.

Miller General Hospital, Greenwich-road, S.E.—Hon. Asst. Physician.

Ministry of Health, Whitehall, S.W.—Vacancy. £833.

New End Hospit[illegible] Asst. M.O. £250.

Northwood, Mou[illegible] S. At rate of £150.

Norwood Childre[illegible] M.O. £250.

Nottingham Gene[illegible] rate of £150.

Paddington Gree[illegible]—Hon. Surgeon to Ear, Nose a[illegible]

Portsmouth, St. [illegible] hird Asst. Res. M.O. £250.

Royal Northern Hospital, Holloway, N.—Obstetric H.S. At rate of £70.

Royal Surgical Aid Society, Salisbury-square, E.C.—Hon. Ophth. Surg. 50 guineas.

St. Alfege's Hospital, Vanbrugh-hill, S.E.—Res. Asst. M.O. £350.

St. Benedict's Hospital, Church-lane, Tooting, S.W.—Asst. M.O. £250.

St. George-in-the-East Hospital, Raine-street, Wapping, E.—Asst. M.O. £250.

St. Giles' Hospital, Brunswick-square Camberwell, S.E.—Res. Asst. M.O. £350.

St. Luke's Hospital, Sydney-street, S.W.—Asst. M.O. £250.

St. Mary Abbot[illegible]*d, Kensington, W.*—Temp. Asst. [illegible]

St. Mary Islingto[illegible]*, N.*—Res. Asst. M.O. £350.

St. Mary's Hospital for Women and Children, Plaistow, E.—Hon. Ophthalmic Surgeon.

Stoke-on-Trent, North Staffordshire Royal Infirmary.—Asst. H.P. £125.

Sunderland, Royal Infirmary.—Sen. H.S. £200.

Swansea County Borough.—Asst. M.O. £500.

Victoria Hospital for Children, Chelsea, S.W.—Temporary Phys. to Out-patients.

West London Hospital, Hammersmith-road, W.—Asst. Phys. for Diseases of Children.

West Riding of Yorkshire C.C.—School Medical Inspector. £500.

Westmorland County Hospital, Kendal.—H.S. At rate of £200.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Leeds (West), East Farsley, and at Tuxford (Nottingham).

NOTES, COMMENTS, AND ABSTRACTS

IONIZED IODINE

(THE MOLSON IONIZED IODINE COMPANY, 34B, GABRIEL'S-HILL, MAIDSTONE)

AN investigation of the properties of the preparation ionized iodine (Molson brand) has been undertaken by THE LANCET and the results are as follows:—

The composition of this solution as given on the label sent out on the bottles is—

	Parts.		Parts.
Iodine	7·91	Ammonium	1·02
Chlorine	10·04	Hydrogen	0·05
Potassium	2·89	Salicylic acid	2·00
Sodium	1·16	Chlorophenols	2·00
Magnesium	0·76	Total	27·83

One part of this mixture is dissolved in 115 parts of 10 per cent. glycerol.

Quantitative analysis on the same basis gives the following results, a table calculated in percentages from the above figures being added for purposes of comparison.

	Found. (Parts per cent.)	Calculated. (Parts per cent.)
Iodine	0·2429	0·2440
Chlorine	0·3117	0·3240
Potassium	0·0920	0·0910
Sodium	0·0366	0·0362
Magnesium	0·0230	0·0237
Hydrogen	0·0016	0·0015
Ammonium	0·0315	0·0318
Salicylic acid	0·0628	0·0624
Chlorophenols	0·0621	0·0624
Total	0·8642	0·8770

The solution is clear to the naked eye, microscopically, and under conditions of dark-ground illumination. Some of the constituents are in a colloidal form, and can be separated by the addition of alkali and subsequent acidification. Attempts to redissolve the precipitate thus formed, and at the same time maintain a neutral or faintly acid reaction, were not successful. The constituents which separate in this way are salicylic acid and chlorophenols; no attempt to separate and characterise the various chlorophenols present was attempted.

The preparation is isotonic, and the lowering of freezing point (Δ) is −0·52° C.

Ionized iodine is faintly acid in reaction, having a pH value of 2·5 and a titratable acidity equivalent to 12·35 c.cm. of N/10 caustic soda per cent.; 4·45 c.cm. of this is accounted for by the salicylic acid present, the remainder probably being in the form of mixed hydrochloric, hydriodic, hypochlorous, and hypoiodous acids. Calculated as hydrochloric acid, this figure would be equivalent to a concentration of hydrochloric acid of 0·0209 per cent., or approximately 0·06 per cent. of the ordinary concentrated solution.

Iodine is present to the extent of 0·0617 per cent. in a free state, whilst the total content is 0·2429 per cent. The difference between free and combined iodine (0·1812 per cent.) is in an inorganic state, there being none of this element in organic combination. The mode of combination is complicated, as chloro-iodine compounds, hydriodic acid, hypoiodous acid, iodic acid, and iodides can all be detected in the solution.

Chlorine is present in combination (1) with iodine, (2) as inorganic chlorides, (3) as hydrochloric acid, (4) in traces as hypochlorous acid and possibly as chloric acid or its salts, and (5) as cyclic organic compounds in the form of chlorophenols. The amount available as a free combining agent can be deduced from its action on unsaturated organic compounds and from the oxidising properties of the solution. Estimated in this way, the combining power was found to be equivalent to approximately 0·02 per cent. of free chlorine.

The preparation has a powerful oxidising action on both inorganic salts (such as ferrous salts) and on organic compounds, many dyestuffs for example being bleached. This action is due partly but not wholly to the free iodine present, as when this element is rendered inactive by the addition of sodium thiosulphate oxidising properties still remain. The total amount of oxygen available which can be accounted for by the free iodine is 0·0038 per cent., whilst experimentally there is available 0·0110 per cent. This difference is due to the various iodo- and chloro- acids mentioned above. On account of this powerful oxidising action the solution is corrosive when in contact with metals for any length of time, and after long periods it will destroy organic material such as cork, silk, and wool; for this latter action to occur, however, contact with the preparation must be for some weeks.

ACTION ON PROTEIN

The solution does not precipitate blood albumin, globulin, or fibrinogen. Serous effusions, provided that they do not contain any mucus, are similarly not affected. Mucus is precipitated by the solution in its natural state, but not if it is previously rendered alkaline, the precipitating agent being the acid and not any of the other constituents. The free iodine present is slowly taken up by protein solutions (so that the mixture gradually loses most of its colour) to form additive compounds as the element cannot be recovered subsequently in an inorganic state. In the presence of weak alkali the iodine is very rapidly absorbed, and cannot be liberated again on subsequent acidification. If the preparation is left in contact with a protein such as gelatin, and is then poured off after the visible iodine is absorbed, it still possesses iodising and oxidising properties, so that when it is again placed in contact with gelatin, iodine (and chlorine) pass into the protein and combine with it as before until the whole of the available supply is used up. In a similar manner, if a slab of gelatin is placed in contact with the solution it will be stained with iodine to a depth proportional to the length of time of contact; for a considerable depth below the visible stain, however, both iodine and chlorine, as additive organic compounds, can be detected showing that iodo-chloro compounds of considerable penetrative power are present. These iodo-chloro compounds, which penetrate deeply in this manner, combine with the protein and are not recoverable wholly in the inorganic form in which they were originally present.

ACTION ON RED BLOOD CORPUSCLES AND HÆMOGLOBIN

The effect on hæmoglobin solutions is to form a mixture of acid hæmatin and methæmoglobin. This change occurs when the concentration of the antiseptic in the solution exceeds 1·8 per cent., and takes place almost instantaneously when a concentration of 4 per cent. is reached. When whole blood (oxalated) is used this action is not observed until at least an equal volume of antiseptic is added and no decomposition of hæmoglobin takes place. This is due presumably to the fact that whole blood is sufficiently well buffered to overcome the free acid present in the antiseptic, whilst the protein combines with the free and combined iodine and chlorine and prevents their oxidative action on the pigment.

No hæmolysis of red blood corpuscles occurs even after 24 hours when washed cells are suspended in the undiluted antiseptic, but naturally takes place with solutions diluted with water, but not when normal saline is used. No alterations in the volume of the cells takes place under the same conditions, as determined by hæmatocrite measurements. When washed cells are used for these determinations an almost immediate conversion of their contained hæmoglobin as described above takes place, but this is not observed when whole (oxalated) blood is used.

ACTION ON LEUCOCYTES

The shape and staining reactions, both of cytoplasm and nucleus of all types of white blood corpuscles, are not altered by contact with the antiseptic. This applies to blood films made and stained in the ordinary way with Leishman stain after treatment of the dried film for five minutes with the undiluted antiseptic, and also to films made from oxalated blood and blood taken directly into the solution and subsequently stained. Effects upon the opsonic index were not determined.

BLOOD COAGULATION

Blood coagulation is not delayed, and the clot formed in the presence of the antiseptic possesses normal firmness and is normally retractile. This property was tested on oxalated blood with subsequent addition of an amount of calcium chloride sufficient to restore a normal ionic calcium content to the mixture. When mixed with an equal quantity of antiseptic clotting is delayed, but not more than in a control preparation in which normal saline replaced the antiseptic, the delay in both cases being due to dilution only. When only small quantities of antiseptic are used—e.g., up to one-tenth of the volume of the blood—no delay was observed. Similar tests on scarified areas of skin showed that the blood oozing through on to dressings moistened with ionized iodine clotted in a normal manner, and also that dressings applied in this way did not adhere to the wounds.

DIFFUSION EXPERIMENTS

Diffusion across collodion membranes takes place readily, all the constituents passing through. When dialysed against water, inorganic chlorides and iodides can be detected on the other side of the membrane in from two to five minutes, depending upon the thickness of the membrane and its method of preparation—i.e., on its degree of porosity. Free iodine appears shortly afterwards, then chloro-compounds (inorganic), and, finally, the salicylic acid and chlorophenols; some retention within the membrane itself appears to take place with the latter compounds.

Diffusion across solid slabs of gelatin has been described above, where free iodine was shown to be retained whilst the other constituents diffused more readily. Similar experiments using omentum as a semipermeable, natural membrane showed that the free iodine was retained almost completely within the membrane, whilst the other constituents diffused through readily, the dialysate possessing antiseptic and oxidising properties, although these were considerably less than is the case with the undiluted product.

Rapid diffusion occurs in agar-agar plates: if a cotton-wool pad well soaked in the antiseptic and contained in the end of a short open glass tube is placed in the centre of a freshly inoculated Petri dish, diffusion towards the edge of the dish is sufficiently rapid to prevent the growth of organisms excepting perhaps at the extreme periphery. The rate of diffusion and the dilution taking place depend amongst other factors on the thickness of the agar plate, the percentage amount of agar present, and the amount of antiseptic used. The inhibiting action is not so marked when serum-agar is used, due probably to the fact that unsaturated compounds are present which remove the active iodine and chlorine by forming additive bodies.

ANTISEPTIC POWER

Tested on *B. typhosus*, *Staphylococcus aureus*, and hæmolytic streptococci it was found that cultures of these organisms could be killed in 2½ minutes by the antiseptic diluted with an equal amount of water. About half of this antiseptic power is due to the free iodine present, as when this element is eliminated by the addition of sodium thiosulphate the above organisms required treatment with the undiluted antiseptic for 2½ minutes before their growth was inhibited. The presence of sterilised (boiled) fæces, blood-serum, or ascitic fluid does not materially affect the antiseptic properties of the preparation.

Control experiments with standard phenol solutions showed that the test organisms were killed in a similar period by 2½ per cent. (1 in 40) carbolic acid.

LETHAL ACTION, AND ACTION ON MUCOUS MEMBRANES

Approximately 12 c.cm. per kilo of body-weight were found to be lethal when injected intravenously into rabbits. This action is due largely to the free iodine present; when this is removed by means of thiosulphate the preparation is toxic only in very large doses. When injected subcutaneously and intraperitoneally no toxic effects were observed with doses of 20 c.cm. per kilo of body-weight.

When applied continuously—e.g., for two hours—to mucous membranes, a coagulation of superficial mucus takes place, followed by histological evidence of increased glandular activity on the part of the mucus-secreting glands, and a mild polymorphonuclear leucocyte infiltration. No coagulation of tissues occurs. When applied for a short while only—e.g., for five minutes—no histological changes can be observed apart from the superficial coagulation of mucus. Repeated applications daily for a period of 14 days resulted in a mild submucous polymorphonuclear infiltration.

No changes in ordinary skin could be observed after daily applications for 14 days.

DEODORISING ACTION

The preparation has a very marked deodorising action on such pathological material as fæces, pus, and decomposing urine.

RHEUMATISM AS A PUBLIC BURDEN

THE urgency of rheumatism as an industrial problem is the theme of a course of lectures now in progress at the Royal Institute of Public Health. Presiding at the first meeting, Sir Arthur Stanley said that he was glad to see that this matter was being taken up in academic circles. "Frankly," he said, "I had always thought that the medical profession was rather bored with it. But even the medical profession is moving with the times."

The first lecture was given on Jan. 18th by Dr. Langdon Brown, Regius professor of physic in the University of Cambridge, and the second on Jan. 25th by Dr. Fortescue Fox, chairman of the Ligue Internationale contre le Rheumatisme. The evolution of medicine, Dr. Fox said, seems to show that the problem of the epidemic is on its way to solution, that acute diseases are on the whole becoming less prevalent, and that we are reaching an era of chronic disease. This is a new problem, requiring new ways of approach; the objective is to save health rather than lives.

Reports submitted to the recent international rheumatism congress in Paris showed, said Dr. Fox, that the incidence of rheumatism is maximal in outdoor occupations, especially those with hard labour and exposure to cold. In Sweden, G. Kahlmeter found that the permanent invalidity considerably increased between 1918 and 1928, and now exceeds that from pulmonary tuberculosis. About 30,000 arthritic persons are now disabled in Sweden (6 per cent. of the population) at a charge upon the State more than twice as great as that for tuberculosis. J. van Breemen has analysed the occupations of 3000 patients in Holland (Amsterdam), and states that men in outdoor work have from three to five times more rheumatic abnormality than those occupied indoors. A report from Germany suggests that nearly 75 per cent. of industrial workers over 40 years of age suffer from some form of rheumatism. The report for the rheumatism committee in the Soviet Republics emphasised the great importance of chill, and gave figures showing a great reduction of invalidity in factories where this risk was minimised. An analysis of 19,000 cases treated at the chief spa hospitals in England confirmed the main conclusions of the other reports: "Those most affected are, in men, the strenuous manual workers exposed to damp, and, in women, housewives and home workers."

Dr. Fox believes that many contributory factors are now taking a fixed place in the constellation "Rhuma." There is no disease, he thinks, for which a single cause is more impossible; at the same time it is common to find a dominant cause, and the vicious circle can be broken only at this point, and in favouring circumstances. He attributed much importance to the production of chronic chill by repeated exposure to uncompensated cold. Rheumatoid, the "British arthritis," was often connected with chill; osteo-arthritis, on the other hand, was related to mechanical trauma (injury).

Further lectures in the series are being given by Dr. C. W. Buckley, Dr. W. S. C. Copeman, and Miss Margaret Edminson. Particulars may be had from the institute, 23, Queen-square, London, W.C.1.

INSTRUCTION ON NURSING PROCEDURES

THERE are many procedures on the borderland between medicine and nursing of which the doctor is often content to assume that the nurse has mastered the practical details, and thus issues his orders in general terms. This detached attitude may have its dangers, for not all private nurses have been recently trained. It is wise to be prepared to give precise instructions. An extraordinarily comprehensive little manual,[1] compiled primarily for practising nurses, will meet a need which the doctor may have felt also. Its author, Miss Powell, better known as Sister Hope, of the medical side of St. Bartholomew's Hospital, has provided a concise summary of the requirements of almost every medical emergency, and has included notes on the dietaries appropriate for various conditions. Miss Powell does not advocate any procedure, but mentions the occasion for which it may be ordered, and then tells the nurse exactly how to carry it out. Her style is simple, direct, and vivid, and her little book will be more often consulted by doctors and nurses than are many weighty tomes.

HOSPITAL LIBRARIES

ON Jan. 25th a well-attended meeting, organised by the London and Home Counties Branch of the Library Association, on "Hospital Libraries" was held in the Nurses' Home of the Middlesex Hospital. Miss Frost, librarian to the public library at Worthing, presided. Mrs. R. Beddington, hon. librarian to the Middlesex Hospital, spoke of the system employed in hospital libraries. The Middlesex could claim to be one of the first hospitals to have a patients' library, since one had existed there before the war. As the result of many years' experience she emphasised the need for the right type of librarian and for a simple system of handling books. "In the past," she said, "hospital libraries were suffered to exist; now they are looked upon as part of the curative work of the hospital." Mrs. Richmond said that at Guy's no patients' library had existed before 1931; now there were eight librarians, 4800 books, and four trolleys. The wards were visited three times a week. In the paying wards a charge of 2*d.* a volume was made. Special facilities were given for the nurses to use the library. In most hospitals librarians worked in the afternoons, but at Guy's the routine of the distribution fitted in better with the routine work of the wards if it was done in the mornings. Mr. Bedwell, house governor to King's College Hospital, said that historically hospital libraries could be traced to the time when hospitals were monastic foundations, the monks being concerned with the advancement of learning equally with the care of the sick. In England St. Bartholomew's was the foremost example; the present library of the medical school of that hospital was developed from the library mentioned in the records of 1667. In England he knew of no medical school directly concerned with the provision of books for patients, but in the Royal Victoria Hospital, Montreal, a library was staffed and largely financed by women medical students, and was available for the administrative staff as well as for the patients. Mr. Bedwell laid stress on the importance of libraries for nurses and on the greater possibilities of library service in hospitals. Mr. Bolton described the plan in force at the Watford Peace Memorial Hospital. A small stock of public library books was kept in that hospital and was renewed when necessary. In this way a high standard of books in good condition was maintained; the work was carried out by ex-library assistants.

THE YOUNG AERONAUT

Dr. Killick Millard, the well-known medical officer of the city of Leicester, has taken to flying at the age of 62, with such a rejuvenating effect upon himself that he has publicly recommended doctors to prescribe flying for their patients, as a substitute for sending them abroad. He holds that flying might be an ideal treatment for people in need of a change, while in his view this method of transit has become practically safe if only plain aeronautics are indulged in.

HORMONES AND MENSTRUATION.—In a leading article with this title in our issue of Jan. 21st, reference was made to a report on a synthetic œstrus-exciting compound by Mr. J. W. Cook, D.Sc., Prof. E. C. Dodds, and Mr. C. L. Hewett. This report appeared in *Nature* of Jan. 14th (p. 56), and not Jan. 7th as stated in our article.

Births, Marriages, and Deaths

BIRTHS

HALL.—On Jan. 25th, at Wilbraham-place, S.W., the wife of Dr. J. H. Hall, of a daughter.

HOSFORD.—On Jan. 28, at "Cairnton," Stormont-road, Highgate, the wife of R. W. P. Hosford, F.R.C.S., of a son.

LLOYD.—On Jan. 25th, at Bentinck-street, W., the wife of W. Ernest Lloyd, M.D., of a son.

LYNN.—On Jan. 25th, in London, the wife of Lieut.-Colonel Rigby Lynn, D.S.O., I.M.S., of a son.

SCHNEIDER.—On Jan. 27th, at Southampton, to Dorothy (née Green), wife of John Erhard, M.B., B.S. (Lond.)—a daughter.

MARRIAGES

KERR—NEVIN.—On Jan. 25th, at Carr's Lane, Birmingham, James Arthur Kerr, B.Sc., M.D., D.P.H., of Glasgow, to Catherine Dorothea Nevin, B.A., younger daughter of the late Dr. A. M. Nevin, of Sparkhill, Birmingham.

LAWSON—EVANS.—On Jan. 24th, at St. Paul's, Onslow-square, William Thomson Lawson, M.B., Llangadock, to Phyllis Marguerite, only daughter of the late H. Dawkin Evans, Esq., and of Mrs. Evans, Iscoed, Ferryside.

DEATHS

COWEN.—On Jan. 23rd, in London, Edward James Cowen, M.B., T.C.D., aged 78.

ELPHICK.—On Jan. 27th, at Newton House, Kirkcaldy, Harry Noel Keyes Elphick, M.C., B.A. (Oxon.), M.R.C.S., L.R.C.P. Lond., aged 36 years.

EVANS.—On Jan. 24th, suddenly, at The Cottage, Lansdowne-road, Worthing, Thomas Evans, M.D., late Medical Superintendent, Archway Hospital, Highgate.

FLANEGAN.—On Jan. 22nd, Henry James Flanegan, F.R.C.S., of "The Grange," Wellesley-road, Clacton-on-Sea, and Eyrecourt, Co. Galway.

JONES.—On Jan. 27th, at Penderi, Creigiau, Cardiff, William Black Jones, M.D., J.P., formerly of Builth Wells, aged 68.

MARTIN.—On Jan. 28th, at George-road, Edgbaston, Birmingham, Christopher Martin, M.B., C.M., F.R.C.S.

OWENS.—On Jan. 29th, at Longstratton, Norfolk, Charles Arthur Owen Owens, M.D., V.D., J.P., in his 88th year.

SORAPURE.—On Jan. 29th, in a nursing-home at Bournemouth, Victor Edgar Sorapure, M.B., F.R.C.S. Edin., of 17, Wimpole-street, London.

TAYLOR.—On Jan. 29th, in Dublin, Sir William Taylor, Regius Professor of Surgery in Dublin University, aged 61.

WALL.—On Jan. 28th, Maximilian Christian Wall, M.R.C.S.Eng., of Fore-street, Edmonton, N.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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[1] Practical Preparations. By N. W. Powell. London Faber and Faber, Ltd. Pp. 206. 2*s.* 6*d.*

ADDRESSES AND ORIGINAL ARTICLES

DE MINIMIS *

BY WILFRED TROTTER, M.S. LOND., F.R.C.S. ENG., F.R.S.

SURGEON TO UNIVERSITY COLLEGE HOSPITAL

I

THE familiar saying from which I have taken my title and my text tells us that the law does not concern itself with very small matters—*de minimis non curat lex.* If this aphorism gives an authentic glimpse of the legal mind, it tells us also that that enigmatic organ differs sharply in at least one particular from the mind of science. For it is characteristic of science not to value things by their size or according to their apparent importance in the eye of common sense. The scientific world is a democracy of facts where the inhabitants are of equal standing and there is no table of precedence. Indeed the progress of knowledge has been in great part the discovery of the importance of small things and the exaltation of the insignificant. The great development of the medical sciences in the last sixty years has got most of its strength from such a continued revelation of the minute. At its beginning was the demonstration of the meaning of bacteria in disease, about its middle the discovery of the vitamins, in its recent stages the study of the viruses. All these have been concerned with things or substances of which the effective action has been in spite of sizes or amounts excessively small. The theory of microbic disease displaced supposed causes of what we may call naked-eye size—cold and wet, damps, miasmas, and infected airs. For them it substituted bodies at that time almost inconceivably small—the veritable minims of nature. I use that term "minims of nature" to express the smallest imaginable dose of life, not only because in that sense it has good authority behind it—no less, for example, than that of John Milton—but because in this company it must come to our ears with a homely sound. Perhaps we may regret that the pioneers of bacteriology did not revive it instead of inventing in 1878 the term microbe out of misused Greek. If they had been content with established English a pleasant link would have been left between the language of pharmacy and that of pathology. We might well also have been grateful to be able to speak of the viruses as "minims of nature" when we learn that there are among them living particulate and formidable agents so small as to surpass by little the individual *molecules* of hæmoglobin.

The theory of deficiency disease introduced to pathology a principle as wholly new as did the microbe. Like that it involved an immense change of scale and the demonstration that what might be called the naked-eye view of the constituents of the living body was inadequate. But the new principle was of a different kind from that necessary to found bacteriology. No pursuit of the old climatic and sanitarian theories of disease with whatever thoroughness could have led to the doctrine of microbic pathology without the revolutionary inquiries of Pasteur which disclosed an unsuspected mode of existence. On the other hand dietetics failed to disclose the vitamins because inquiries had not been exact and exhaustive enough. The problem of the vitamins was in fact a residuary problem. The dietetic field had been harvested and even gleaned except for what seemed a few inconspicuous remnants that for a long time it was agreed to ignore. Yet it was these very residues that were to yield the richest harvest of all. This peculiarity makes the solution of the vitamin problem of special interest to the student of scientific method. It is therefore as the leading recent case of a problem of the residuary type that I have reminded you of it, for I propose to call your attention in some little detail to that class of problem and its significance for the theory of method.

The economic value of working-over rejected residues has often been proved by the mining engineer and the metallurgist; similarly the need for vigilance in securing complete exhaustion of raw materials has shown its value to the chemist and the pharmacist. These lessons may usefully serve as metaphorical injunctions in the prosecution of scientific research itself. Time after time it has been shown in the latter activity that the humblest residual phenomena have concealed great secrets. In order to give this point all the salience I can, I shall go outside the field of medicine, and even of the biological sciences, to that of inorganic chemistry, and shall venture to recall to you the familiar and even hackneyed story of the finding of argon and the other inert gases of the air.

II

In the last quarter of the eighteenth century the study of the elementary gases was being pursued in England with much activity. Among those who were thus engaged we chiefly remember to-day the names of Priestley, Watt, Black, and Cavendish. Of these, Henry Cavendish was perhaps the ablest investigator as he was certainly the most extraordinary man. He was a millionaire and the grandson of a duke; yet his mode of life was hermit-like and spartan, his manner shy to the extent of oddity, and though he was a great experimenter, the publication of his researches was notably careless and hesitating. This last characteristic left his reputation for long far below his merits, but to give a measure of his real quality we need only recall that he was the first to demonstrate the constitution of water by hydrogen and oxygen and its synthesis from those elements.

Sometime before 1785 Cavendish was studying the separation of nitrogen from the air. He used the method of passing a stream of electric sparks through a glass tube containing air mixed with excess of oxygen. The nitrogen and oxygen combined to form an oxide of nitrogen which was absorbed by a solution of caustic potash, while the oxygen was removed by another absorbent. When, therefore, the process was complete and all the nitrogen oxidised, his tube should have been empty of any gas. But the result was different and I will quote his description of it, using however the modern terms for the gas concerned. After these processes he says, "a small bubble of air remained unabsorbed which was certainly not more than 1/120 of the [nitrogen] let up the tube. So that if there is any part of the [nitrogen] of our atmosphere which differs from the rest and cannot be reduced to nitrous acid we may safely conclude that it is not more than 1/120 part of the whole." That bubble, of course, was argon. Cavendish had seen it, but argon remained undiscovered. If curiosity was aroused at any time during the next century by this ambiguous residue in Cavendish's eudiometer, it has left no record; and we may be sure that any questionings were invariably stilled by the comfortable assumption of experimental error.

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* Delivered before the Guild of Public Pharmacists on Jan. 18th.

III

It was over a hundred years later, in the last decade of the nineteenth century, that the meaning of this residue was explained, but the residue itself had first to be rediscovered by a wholly different line of approach. Chiefly owing to the work of Cavendish and his contemporaries, inorganic chemistry had experienced a continuous and successful development; but it had now fallen, as those of us who were students then can remember, on rather hard times. It had reached one of the flat periods to which all purely experimental sciences seem to be subject. The inspiration derived from its founders, after burning brilliantly for so long, was dying down. Ideas were few and—an even more ominous sign—were apt when they were at all speculative to be deprecated in the name of science. This dread of speculation, and the disguise of it as scientific austerity, are characteristic symptoms shown by an experimental science when its life is running thin. Such phenomena were, for example, apt to appear in the discussion of one of the few speculative conceptions that had found any kind of currency among chemists—the once famous "Prout's hypothesis." William Prout, it may be of interest to recall here, was a doctor as well as a chemist, and the discoverer of the presence of free hydrochloric acid in the gastric juice. As early as 1815 he enunciated the view that there must be a simple numerical relation between the atomic weights of hydrogen and the other elements, and that hydrogen was a sort of elementary substance that in some way entered into the composition of the others. Even on the evidence then to be reckoned with, this was a sensible and not very recondite guess, but in the next seventy or eighty years it produced from time to time a surprising amount of indignant criticism. It must of course be admitted that to those who had comfortably settled down to the view that each element is made up of irreducible indivisible billiard balls of a special kind, it was an irritating and repulsive dose. By them it was naturally criticised as a flighty departure from scientific rectitude, and I can remember the feeling some of my teachers gave me that it was a little disreputable even to entertain such an idea. Yet it was true; and it gave the hint that was to begin an energetic revival and extension of inorganic chemistry.

The hint was taken by a man whose personality (fortunately preserved for us by his son in a notably graphic memoir) would in itself justify the recall of the events that ensued. The third Lord Rayleigh was born into a family of country squires and landowners, and in many respects was thoroughly representative of his class. He was as strong a Conservative, as sound a church-goer, and as firm an upholder of the established order as his position and convictions demanded. He was brought up among the assumptions of a world which seemed to itself endowed and established for ever, and which is still indestructibly preserved for us in the annals of Middlemarch and Barchester. The main physical circumstance of his youth was the profound security of rural England, where the mild landscape and the deeply rooted village looked humbly to the Great House standing side by side with the church. Experience shows that a type and an environment such as this are not among the richer sources of our scientific masters. But they permitted Rayleigh, as they had permitted Henry Cavendish, to become one of the leading physical investigators of his day; and they perhaps reinforced, in the case of Rayleigh, the caution, the patience, and the stable judgment in which he conspicuously excelled.

It was these last gifts that were to be of decisive value when in 1882 he yielded, as many physicists had done before, to the siren song of Prout's hypothesis, and made up his mind to decide once for all whether, if every precaution that even his patience could suggest were taken, it might not be possible to show that a simple arithmetical relation did obtain between the atomic weight of hydrogen and those of the other elementary gases. This involved the weighing of these gases under exact conditions, and was of course an enormously laborious task. After some years the work on hydrogen and oxygen was completed, but though it failed to bring the atomic weight of the latter nearer to the hoped for 16 than 15·882, we find him in 1892 at work on nitrogen which had promised to be technically a less arduous affair. Things went well with this, and he was comparatively soon in possession of a stable weight for the gas that satisfied his exacting standards. He might well have supposed his task was done, but in fact he was innocently approaching its crisis. He had been weighing nitrogen got from air and therefore, as we now know, mixed with the heavier argon. This would be discovered only if the weight obtained were compared with the weight of nitrogen got from chemical decomposition and therefore free from argon. He stood thus at the parting of two courses of infinitely different significance. A good and consistent series of weights had been obtained; any man might have been satisfied with such a result. Down that road lay a moderate satisfaction and relief from a long and inexpressibly tedious research, but nothing else. He might, on the other hand, decide that he must confirm his results by work on nitrogen got from another source than air. Down that road, all unsuspected, lay heavy labours and anxieties, but also lay the finding of argon and consequences beyond any dream. There cannot have been many more critical moments in the history of science.

IV

It is a natural impulse of historians to make a good deal of what are called the turning points of history. At these nodes in the story of the past there is apt to be a concentration of issues on a single hour or on a single man, an intensification of meaning that gives dignity even to the trivial, a heightened illusion of free will in the actors. All these combine to endow the vague historic plungings of mankind with an air of design and æsthestic structure, so that it is but a poor historian who does not make an effective scene of Cæsar at the Rubicon, or Charles Edward at Derby. The history of knowledge has not been much recognised as yielding moments of an equal intensity, perhaps because its high occasions are undecorated by trumpet or banner and call to mind no sound of marching feet. But to the ear in tune with the finer vibrations of reality, science has had its crises which give a not less authentic thrill, and here was one of them. We watch Rayleigh at this turning point in the history of science with a confidence that is derived from our knowledge of his character as much as from our knowledge of the sequel. His caution and patience and judgment now had their unique opportunity. He decided that nitrogen prepared from chemical combination must also be weighed to confirm the weight obtained from atmospheric nitrogen, and he was soon brought up against a clear and unshakable discrepancy between the two results; the chemical nitrogen was ½ per cent. lighter than the atmospheric nitrogen. It is not necessary to follow the steps of the toilsome research by which it was proved that the excess weight of the atmospheric nitrogen was due to mixture with an unknown constituent of the air. At the end it became clear that this unknown gas was the "small bubble of air" which had "remained unabsorbed" in Henry Cavendish's eudiometer, and whose enigmatic presence had stood in the background of chemistry inviting curiosity in vain for over a hundred years. It was composed of the inertest substance in the physical world. In the intellectual world however it produced a veritable series of explosions. Argon led to helium and neon; helium pointed the way to the mode of disintegration of the radio-active atom, neon to isotopes and the meaning of the periodic succession of the elements. It is therefore no departure from rational moderation to say that this historic "bubble of air" was one of the most pregnant residues in the whole history of chemical analysis.

Whatever intrinsic interest this old story may possess, I should not have ventured to tell it except as a classical illustration of the significance of residuary phenomena in the history of science. That general lesson must surely provoke us to ask what application of it we can make in the departments of knowledge with which we are more specially concerned. I propose therefore to consider briefly certain aspects of medicine to which it may be relevant.

V

The fundamental activity of medical science is to determine the ultimate causation of disease. That statement sounds like a complete commonplace and should be one. We may perhaps, however, feel some doubt whether we all of us keep it in mind as clearly as we might. The brilliancy and the practical value of the great discoveries that have elucidated the processes of disease tend a little to obscure the fact that many of them tell us nothing about ultimate causation. Thus we are apt to speak of the treatment of myxœdema by thyroid extract or the treatment of diabetes by insulin as if the primary pathological state were affected by the remedy instead of being merely compensated for. As a matter of fact, when we come to survey more attentively the general state of medical science we cannot but be struck by the slight extent to which much recent progress—as, for example, that on the relation of internal secretion to the production of symptoms—has enlightened us in the matter of ultimate causes. A great deal of this work, though of course of the greatest value, has been on what we may call the physiological level, and has scarcely penetrated to fundamental pathology.

It may be interesting to glance over in a summary way the actual situation as regards our knowledge of the causation of disease. At present we can enumerate only six agents:—

Injury.
Malformation.
Defect of diet.
Poisoning.
Parasitic infection.
Neoplasm.

Of these it will be noticed that two—malformation and neoplasm—are not to be regarded as primary in a strict sense, since in time they will almost certainly be resolved into other factors. Setting aside, therefore, the pathological phenomena deriving from these two, we may say that we have for the explanation of the whole of the rest of disease only four principles—injury, defect of diet, poisoning, and parasitic infection. Let us now approach the situation from another aspect. The diseases known to us fall into three groups: first, those that can be assigned with certainty to one of the four causes we have enumerated; secondly, those which have been assigned with more or less probability to one of these; and thirdly, those of which the cause is unknown. The rate at which fresh diseases pass over from the third group to the first, and are found to be due to one of the known kinds of cause, is nowadays slow, and tends necessarily, other things being equal, to become slower. The question thus inevitably arises whether a time may not come and how far away it is, when the application of known principles to the explanation of disease will be at a standstill. Another way of putting the same question would be to ask how far it is likely that the further extensive explanation of disease depends on the discovery of some totally new principle comparable with the microbe or the vitamin. Consider such common and serious diseases as exophthalmic goitre, diabetes, and disseminate sclerosis. They have been under investigation a long time and with an increasing refinement of method, yet, however much we may have learnt of their mechanism, we still know nothing about their ultimate causation. Are they likely to be brought under causal mechanisms we already know, or are they and other diseases in a similar situation, like the residuary "bubble of air" in Henry Cavendish's eudiometer, awaiting for their explanation some radical fresh development? In answer to these questions we cannot make even a plausible guess.

In the last sixty years two wholly new causes of disease have been discovered—microbic infection and vitamin deficiency. The first of these explained a group of diseases which carried a certain broad clinical resemblance, so that a very acute clinician, in the days before bacteriology, might well have been able to guess that whatever their causes they were of the same general order. The case was strikingly different with the diseases explained by vitamin deficiency. In their clinical manifestations these were remarkably miscellaneous, and showed differences of the widest kind, such as, for example, those between rickets, beri-beri, and scurvy. No clinician, however alert, could have guessed that these were due to cognate causes. Furthermore, the deficiency diseases seem actually to mimic the diseases caused by other agents; consider, for example, the resemblance between vitamin-B deficiency and alcohol poisoning, each with its acute cerebral symptoms and chronic peripheral neuritis, and the resemblance of scurvy to an infection. The discovery of deficiency diseases has thus disclosed that allied causes may produce clinical effects showing no hint of any kind of relation, and has thus made it more difficult than ever to infer from clinical phenomena any suggestion as to new prime agents of disease.

VI

I should have hesitated to indulge in these extended reflections about residuary phenomena in relation to science in general and medicine in particular, if I had intended to abandon the subject in the complete blind alley into which it seems to have led us. It is true that we can form no reasonable opinion whether the great mass of disease still remaining unexplained will be cleared up by the more thorough exploitation of principles already known to us, or whether its final elucidation will be in any or in great part made by the discovery of some new kind of cause. Engaging as that problem must be to any philosophic student of medicine, it must remain for the present in the region of insoluble conjecture, but its interest may have a useful property if it sends us for some hint of guidance back to the history of science. If we may be allowed to return for a moment to a topic on which we have perhaps already too inordinately dwelt, we shall recall that the discovery of argon was due to Rayleigh's determination to carry the measurement of the known phenomena to a finer point than had yet been reached. In his branch of knowledge the saying that science is measurement was already familiar and manifestly true. As an indirect result of his work the idea can now be carried much further, and we can say that, at least in the atomic world, all quality is quantity. In such a doctrine we seem to be very far from the biological sciences, and still further from anything that could ever be recognisably human. Nevertheless it may remind us that the need and use for exact measurement in those sciences have steadily increased and must continue to do so.

Up to the present time medicine has almost wholly avoided the burden of measurement. Its field is so rich and various that qualitative methods of inquiry have proved at least adequate. Signs, however, are beginning to be perceptible that perhaps the main harvest of those methods has been gathered. If these omens are fulfilled, a time will come when an exact and exhaustive numerical exploration of the facts of disease will have to be undertaken. When we contemplate the practical success and the continued progress of medicine we are apt to overlook the fact that it is without precise data. Consider merely the distribution of health and disease in relation to topography, climate, race, sex, and age. Our knowledge of these fundamentals is a series of the vaguest approximations; if we had really exact knowledge of them it is quite probable that many problems of causation now insoluble could be solved by inspection. A similar lack of real exactitude is present in our knowledge of normal functions such as the pulse-rate, temperature, reflexes, sleep, appetite, right-handedness, weight and muscular strength, and above all, in our knowledge of the extent to which these functions are capable of adaptation.

It is obvious that to obtain information of the required precision on matters such as these is altogether beyond the range of the individual worker. Thus our final conclusion must necessarily be that if medicine is to acquire a secure foundation of exact and measured data, it can do so only as the result of inquiries far more widespread and coördinated than have yet come within the range of practical contemplation.

The considerations we have surveyed have led us through a course of which the windings may not have shown any very clear relevance to this occasion. Our conclusion, however, could not have been reached in circumstances more appropriate. The only branch of medicine which has always and with increasing intentness and success pursued the ideal of exact measurement is pharmacy. I do not think there can be any reasonable doubt that the future of the parent subject to a large extent depends on how far she is able to adopt the characteristic method of her daughter.

HORSESHOE KIDNEY

AN ACCOUNT OF FIVE CASES

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The term horseshoe kidney implies a fusion of the kidneys across the vertebral column. The connecting isthmus varies from a narrow fibrous or parenchymatous bridge to complete fusion along the mesial borders.[1] In the majority of cases the isthmus runs between the lower poles, averages in width 4 to 5 cm., and crosses in front of the aorta and vena cava at the level of the fourth or fifth lumbar vertebra. Each kidney has its own pelvis and ureter, the latter passing ventral to the isthmus and terminating, as a rule, in the normal position in the bladder. The incidence, as obtained from autopsy records, is 1 in every 643 cases.[2] As would be expected, the statistics taken from operations show a much higher ratio, because pathological changes are especially apt to arise in this form of anomaly. In 2424 operations[3] on the kidney reported from the Mayo Clinic, 17 cases of horseshoe kidney were found. Since publishing a report of horseshoe kidney[4] two years ago, I have met with five further cases. I think an account of these will serve a useful purpose, for the records of many observers bear witness to the great difficulty of diagnosing this condition. In the series of 17 cases from the Mayo Clinic, Judd, Braasch, and Scholl[3] diagnosed the anomaly pre-operatively only eight times. According to Lazarus,[5] a correct diagnosis was made in only 12 cases out of 108 operations on horseshoe kidneys collected by Loeffler; in 1 out of a series of 3 by Rathbun; and all the 9 cases reported by Oraison and Gayet were diagnosed on the operating table.

CASE REPORTS

CASE 1.—A man, aged 23, was referred to the urological department of the Glasgow Royal Infirmary complaining of increasing difficulty in urination of three years' duration. He also suffered from generalised abdominal pains and a frequent feeling of abdominal distension. On three occasions during one day, eight months previously, he had passed blood in his urine.

Cystoscopy showed some injection of the trigonal vessels but no other vesical abnormality. A mediumly concentrated dye appeared at the right ureteric orifice five minutes after an intravenous indigo-carmine injection. No dye appeared from the left orifice after eight minutes' observation. A No. 10 ureteric catheter was passed into the right ureter as far as the renal pelvis without difficulty, but it was found impossible to insinuate either a No. 10 or No. 9 catheter farther than 1 cm. up the left ureter. A pyelogram was therefore made of the right kidney only, 17 c.cm. of sodium iodide being injected before any renal uneasiness was produced. The skiagram (Fig. 1) showed a bizarre-shaped, slightly dilated pelvis lying very close to the middle line, the lowest calyx pointing downwards and medialwards. A horseshoe kidney was diagnosed. A further attempt was made later to catheterise the left ureter, but was not successful. An intravenous urographic examination was therefore made, using as the medium 100 c.cm. of 40 per cent. uroselectan. This revealed a marked dilatation in the left segment, which it was decided to resect.

At *operation* in July, 1930, the approach was made through an extraperitoneal lumbar incision. The upper pole, which did not appear to be unusually low, was isolated. The isthmus consisted of parenchymatous tissue, was about 4 cm. in width, and crossed in front of the great vessels. The ureter ran anterior to it. After dividing the latter, the posterior surface of the kidney was freed. The pedicle consisted of two separate groups of vessels, one going to the upper pole and the other to the hilum. These were clamped, divided, and ligatured. The isthmus was now cleared to near the midline and there divided in a wedge-shaped manner. Two mattress catgut sutures were inserted through the stump, about three-quarters of an inch from its end, and a series of interrupted catgut sutures was inserted so as to approximate the edges. This resulted in a complete cessation of bleeding. The wound was closed up to a small tube, delivered through the upper end of the incision. Some urinary leakage through the tube began two days after operation; otherwise the patient had an uninterrupted convalescence. The wound healed by first intention except at the site of drainage, whence a slight urinary discharge continued up to the time of dismissal from hospital, three weeks after operation. This discharge ceased within a few weeks.

A communication from the patient, received in June, 1932, stated that he was unable to report personally as he had just started work after being four and a half years idle. He also wrote: "I now feel in the best of health. I have never had a pain nor a day's illness since the operation and feel as strong as ever I felt in my life."

FIGS. 1 2 3

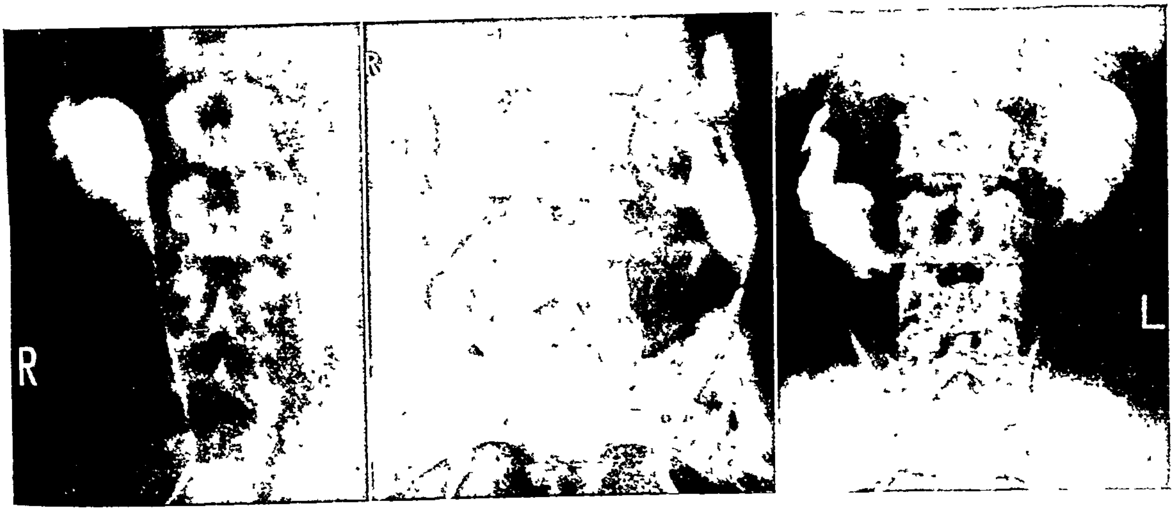


FIG. 1.—Ascending pyelogram of the right kidney of Case 1. The pelvis lies close to the vertebral column, and the lowest calyx, pointing downwards and medialwards, is in apparent contact with a vertebral body.

FIG. 2.—Bilateral ascending pyelogram of Case 2. All the calyces point medialwards, except the upper. Note the calcareous shadow lying lateral to the root of the upper calyx on the right side.

FIG. 3.—Bilateral ascending pyelogram of Case 3. Note how the upper calyces overlap the pelvis on the left side.

CASE 2.—A woman, aged 28, employed as a carpet-weaver, was referred to the department in December, 1930, complaining of urinary frequency of six months' duration. She required to urinate about every two hours during the day and had to rise once or twice at night.

Chemical examination of the urine was negative. A skiagram of the urinary tract showed a calcareous shadow in the right renal area, which was thought to be a gland. Cystoscopy showed a well-marked trigonitis. The ureteric orifices were normal in appearance and position. A medium blue dye appeared from each ureteric orifice four minutes after an intravenous indigo-carmine injection. Both ureters were catheterised without difficulty and a bilateral pyelogram made (Fig. 2). The pelves were markedly elongated and low, and abutted on the vertebral column. All the calyces except the upper pointed medialwards. The upper ends of the ureters curved outwards from and then inwards to the vertebral column. The calcareous shadow seen in the preliminary skiagram was contiguous with the root of the upper calyx on the right side, and it was decided to explore the right segment.

Operation.—Under a general anæsthetic an extraperitoneal lumbar incision was made. The upper pole occupied a position only slightly above the level of the iliac crest. The diagnosis of horseshoe kidney was confirmed by tracing an isthmus of parenchymatous tissue from the lower pole across the midline in front of the great vessels. The right ureter was seen to cross the front of the isthmus. A hard nodule was felt on the inner border of the exposed segment, adherent to the upper part of the hilum. An incision was made directly over it, and what proved to be a calcareous gland was removed. A small tube was brought out through the upper end of the incision and the wound closed. Convalescence was uneventful, and the patient left hospital three weeks after operation with the wound closed. When seen in June, 1932, she stated that she was enjoying excellent health. There had been no recurrence of the nocturia since operation, and during the day she could go for four to five hours.

CASE 3.—A man, aged 32, was referred to the department in September, 1931, complaining of pain in the upper lumbar region, more particularly on the left side. The patient was a miner, and his disability, he stated, had started six months previously, following a rack whilst at work. A radiological examination had been made at his local hospital, and a shadow in the left renal area was thought to be a calculus. Intravenous pyelography had also been carried out at the same institution, and the radiologist there had reported "ballooning" of the left shadow and "abnormal outline" of the right.

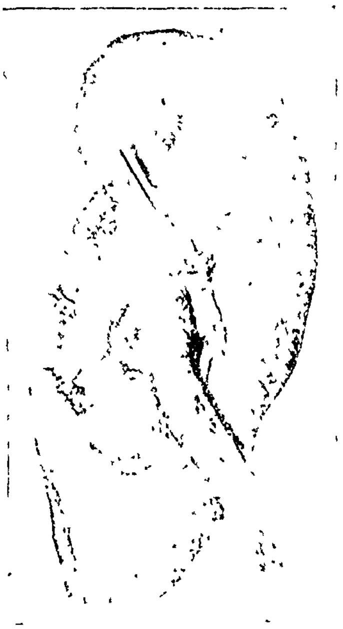
Physical examination of the abdomen was negative. Cystoscopy was negative, and both ureteric orifices were normal in appearance and situation. A catheter was passed up each ureter as far as the renal pelvis, without meeting any obstruction, and 15 c.cm. of sodium iodide were injected into each side before any renal uneasiness was produced. The appearance of the pyelogram (Fig. 3) was typical of a horseshoe kidney. The pelves had a bizarre shape and lay close to the midline. The left one was slightly dilated. Most of the calyces pointed medialwards and, in the left segment, the upper calyces were seen to overlap the pelvis. The ureters curved outwards from and then inwards to the vertebral column on each side. No surgical intervention was advised, as it was considered that the symptoms were probably due to the back strain. A communication from the patient in July, 1932, stated that he had resumed light work, but suffered from frequent attacks of excruciating pain across the small of the back.

CASE 4.—A man aged 34, a miner, was referred to the department in December, 1931. His complaint was of urinary frequency and dysuria of three months' duration. He needed to rise about every hour during the night, and during the day was "always going." For three weeks before his examination he had felt a constant ache in the left lumbar region. Since the onset of the symptoms he had lost a stone in weight.

There was tenderness on palpation of the left lumbar region. The urine contained albumin and pus, and tubercle bacilli were identified without difficulty. Plain radioscopy of the urinary tract was negative. On cystoscopic examination a more or less generalised cystitis was found, and the bladder capacity was reduced to 130 c.cm. The ureteric orifices looked normal. A weak dye appeared at the right ureteric orifice five and a half minutes after an intravenous indigo-carmine injection, and concentrated a minute and a half later. No dye appeared from the left after eight minutes' observation. At a subsequent cystoscopy the right ureter was catheterised one and a half hours after a urea meal, and the secretion from the right kidney collected for urine analysis and for examination of the urea content. No pus cells or tubercle bacilli were found in it, and the urine urea was 2·3 per cent. The examination was completed by making an intravenous pyelogram, using for this 20 c.cm. of uroselectan B. This showed a typical horseshoe kidney appearance. The pelves had peculiar elongated shapes, were situated lower than usual, and the left shadow lay over the transverse processes. On each side some of the calyces pointed downwards and medially. The upper, inner calyces on the left side had a moth-eaten appearance. A diagnosis of tuberculosis in the left segment of a horseshoe kidney was made, and a resection decided on.

Operation was performed under spinal anæsthesia, using 18 c.cm. of percaine. The extraperitoneal lumbar approach was used and the peritoneum reflected towards the midline. The perinephric fat looked healthy, and when it was opened the upper pole was exposed and freed without difficulty. A broad isthmus of parenchymatous tissue was found running in front of the great vessels, and a dilated, hypertrophied left ureter ran anterior to it. The latter was traced downwards to a point about three inches below the level of the isthmus and there divided and ligatured. A true vascular pedicle was found entering the hilum, and was clamped and divided. A small vessel running upwards into the isthmus was also seen and divided. It was now easy to free the left segment and the isthmus, and to mobilise the latter to beyond the midline. Here a sulcus was recognised encircling the isthmus. A stay-suture was introduced on its right side; the isthmus was divided through it in a perpendicular manner and the left segment was removed (Fig. 4). There was very little bleeding. Using the stay-suture to overcome the retraction of the isthmus, a mattress-suture of catgut was passed through the stump about half an inch from its end and tied. This effectively controlled the oozing. The edges of the stump were approximated, as well as possible, by a series of six interrupted catgut sutures. The abdominal wound was closed in two layers, a tube being delivered through the upper end. The perfect relaxation obtained by the spinal anæsthetic greatly facilitated the operation, particularly when dealing with the isthmus.

FIG. 4

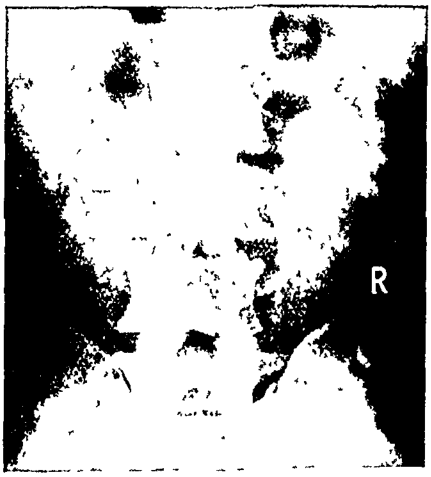


Photograph of the resected segment from Case 4. The upper pole is the seat of a large ulcero-cavernous focus, indicated externally by a large boss. Note the dilated thickened ureter passing in front of the isthmus. Glass rods have been placed in the two vessels passing to the hilum.

For the first two days after the operation the patient was troubled with flatulence. This was relieved by enemata. The tube was removed on the fourth day. On the eleventh day a purulent, sanguinous discharge appeared at the site of the drainage and, later, the middle portion of the wound broke down. A specimen of urine taken from a 24-hour collection, ten days after operation, was negative for tubercle bacillus, and a guinea-pig killed six weeks after inoculation from the same specimen was negative for tubercle. There was a very quick improvement in the rate of urinary frequency, the patient being able to hold his water for three to four hours within a few days of the operation. He was transferred for a period of sanatorium treatment three weeks after operation, with a purulent discharge still coming from the wound. A report from his doctor in August, 1932, stated that the wound was granulating, but was not quite healed. There was no urinary discharge from it. The frequency was three- or four-hourly during the day, and twice at night.

CASE 5.—A man aged 28, a labourer, was referred to the department in April, 1932, complaining of recurring attacks of left renal pain of nine weeks' duration.

FIG. 5



Intravenous pyelogram of Case 5. The pelvis of the right segment appears more dilated than that of the left, the side of the ureteric calculus.

Chemical examination of the urine was negative, and a preliminary radioscopy of the urinary tract proved negative for calculus. A catheter passed up the left ureter was obstructed at 20 cm., however, and a radiogram taken with the catheter in situ showed a small stone at its tip. Sodium iodide (20 c.cm.) was injected into the renal pelvis without causing any uneasiness, and the resulting pyelogram showed a typical horseshoe kidney appearance, with slight dilatation of the pelvis and clubbing of all the calyces. An intravenous pyelogram (Fig. 5) was later made, using 20 c.cm. of uroselectan B. This pyelogram confirmed the diagnosis of a horseshoe anomaly, but showed a greater degree of dilatation in the right pelvis than in the left.

Operation.—Under spinal anæsthesia (percaine 14 c.cm.) an extraperitoneal exposure was made through a curved lumbar incision. The isthmus was seen to consist of thick parenchymatous tissue. The ureter lay anterior, and a stone could be felt within it, about an inch below the lower border. The renal pelvis was seen to be slightly dilated. The stone was removed through a small vertical incision in the ureter, which was then closed by two Lembert-like catgut sutures. A small drainage-tube was brought out through the lower end of the lumbar wound. There was no urinary leakage and the tube was removed on the second day. The patient was dismissed to the convalescent home on the twelfth post-operative day, with the wound completely healed.

DIAGNOSIS

In the presence of renal disease requiring operative intervention, the pre-operative knowledge of the existence of a horseshoe anomaly is a tremendous advantage, particularly in approach. To those experienced in the interpretation of pyelograms, diagnosis should, in most cases, be easy. The only other condition familiar to me which might give rise to confusion is an anomaly of rotation. When this occurs in an excessive degree, the convex border is mesial and the pelvis faces laterally. The pyelogram of such a kidney would show the calyces directed towards the spinal column. As, however, both kidneys are not usually rotated, the pyelogram of the partner kidney would be likely to have a normal appearance. The important diagnostic features of a horseshoe kidney pyelogram are as follows:—

(a) The shadow lies closer to the midline than in the normal, and is usually lower.

(b) The pelvis and calyces are of a bizarre shape.

(c) One or more of the calyces on each side points towards the midline or downwards, and some of the calyces may overlap the shadow of the pelvis.

(d) The upper end of the ureter curves outwards from and then inwards to the vertebral column.

Pyelography is the only reliable diagnostic method. A plain radioscopy might be suggestive by indicating a loss of outline of the psoas shadow, and failing to visualise one or other of the renal poles. There is no syndrome of symptoms and signs characteristic of horseshoe kidney.

SURGICAL TECHNIQUE

Diseases involving a horseshoe kidney should be treated in the same manner as similar diseases in kidneys normally formed. If resection of the affected segment is necessary this involves cutting through the isthmus, which is usually composed of parenchymatous tissue. Most urologists agree that the extraperitoneal lumbar approach is preferable to the abdominal route. By this method there is less likelihood of infecting the peritoneum, especially when dealing with a tuberculous or suppurative lesion, or when there is a possibility of urinary leakage after the operation. It is my custom to make an incision starting about an inch below the costovertebral angle. This is carried downwards and slightly forwards to a point about midway in the costo-iliac space, whence it is made to pass forwards parallel with the iliac crest. The muscles and fasciæ are divided in the line of the incision, which can be prolonged as far towards the midline as seems necessary to give a free exposure of the isthmus. The complete muscular relaxation obtained by spinal anæsthesia greatly facilitates the access. Methods of dealing with the isthmus have been described under Cases 1 and 4, in which resections were carried out.

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STARCH FERMENTATION BY THE "GRAVIS" TYPE OF DIPHTHERIA

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IN a report on diphtheria types published in THE LANCET Wright and Rankin [1] refer to difficulties they have met with in detecting the fermentation of starch by diphtheria bacilli. One of the general conclusions suggested by their paper is that "gravis" strains of the diphtheria bacillus are either absent or very rare in the Edinburgh area. Inasmuch, however, as they do not state definitely whether the gravis strains which they had received from Leeds did or did not ferment starch in their hands, the general impression left by their paper is far from clear.

They maintain that filtered solutions of starch should be used for fermentation tests because starch is readily hydrolysed when its solutions are heated for the purpose of sterilisation. Our own experience has been entirely at variance with this finding. But in view of this statement it seemed desirable to re-examine the behaviour of starch solutions when heated in a variety of ways.

In the work already published (Anderson, Happold, McLeod, and Thomson [2]) on this subject, the method invariably used has been to add sterile autoclaved 5 per cent. solution of British Drug Houses soluble starch to serum peptone water previously sterilised by repeated steaming at 100° C., in amount necessary to bring the final concentration of starch in the medium to 1 per cent. Latterly [3] we have often worked with serum peptone water in which the starch solution was incorporated before commencing the sterilisation by intermittent heating. Such media have never shown any acid reaction when the types of diphtheria bacilli described as "mitis" or "intermediate" are grown in them for a week or more, and inasmuch as both these types of strain attack maltose, which is one of the products of hydrolysis of starch, it scarcely seemed likely that any appreciable hydrolysis of the starch was taking place under the conditions described.

OBSERVATIONS ON FERMENTATION

The point, however, has been raised, and is important for the differentiation of gravis strains. Results obtained both before and after the publication of Wright and Rankin's paper are the following:—

Fermentation of starches of different origin.—The following products were used: (B.D.H.) maize, wheat, potato, and rice starches. These were dissolved in boiling water, autoclaved at 115° C. for 20 minutes as 5 per cent. solutions, and then added in the required amount to serum peptone water (pH 7·8) previously sterilised by intermittent steaming. Four strains previously determined to be starch-fermenting, and eight non-starch-fermenting strains were grown on all four products. All four gravis strains fermented all the specimens of starch with clotting of the proteins of the serum peptone water within 36 hours; whereas none of the other strains had produced any change of reaction after a week's incubation.

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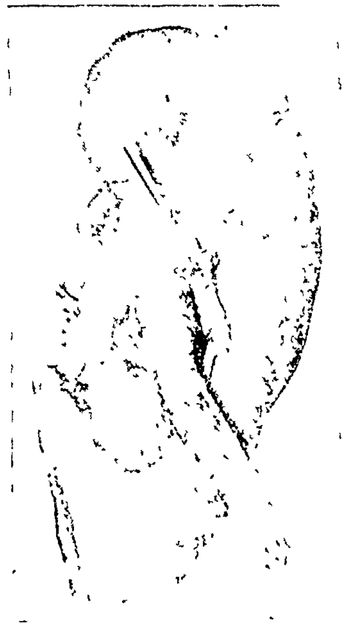
The detection of the products of hydrolysis in complex media by chemical methods cannot readily be made a very delicate observation owing to the reducing action of some component of the peptone; but we failed to find any difference between tubes with and those without starch. Further, the examination of an autoclaved aqueous 5 per cent. solution of starch by Fehling's and Benedict's methods gave no evidence of hydrolysis. If, however, unheated serum is added to any one of these starch-containing media, and it is then inoculated with diphtheria bacilli and of the urinary tract was negative. On cystoscopic examination a more or less generalised cystitis was found, and the bladder capacity was reduced to 130 c.cm. The ureteric orifices looked normal. A weak dye appeared at the right ureteric orifice five and a half minutes after an intravenous indigo-carmine injection, and concentrated a minute and a half later. No dye appeared from the left after eight minutes' observation. At a subsequent cystoscopy the right ureter was catheterised one and a half hours after a urea meal, and the secretion from the right kidney collected for urine analysis and for examination of the urea content. No pus cells or tubercle bacilli were found in it, and the urine urea was 2·3 per cent. The examination was completed by making an intravenous pyelogram, using for this 20 c.cm. of uroselectan B. This showed a typical horseshoe kidney appearance. The pelves had peculiar elongated shapes, were situated lower than usual, and the left shadow lay over the transverse processes. On each side some of the calyces pointed downwards and medially. The upper, inner calyces on the left side had a moth-eaten appearance. A diagnosis of tuberculosis in the left segment of a horseshoe kidney was made, and a resection decided on.

Operation was performed under spinal anæsthesia, using 18 c.cm. of percaine. The extraperitoneal lumbar approach was used and the peritoneum reflected towards the midline. The perinephric fat looked healthy, and when it was opened the upper pole was exposed and freed without difficulty. A broad isthmus of parenchymatous tissue was found running in front of the great vessels, and a dilated, hypertrophied left ureter ran anterior to it. The latter was traced downwards to a point about three inches below the level of the isthmus and there divided and ligatured. A true vascular pedicle was found entering the hilum, and was clamped and divided. A small vessel running upwards into the isthmus was also seen and divided. It was now easy to free the left segment and the isthmus, and to mobilise the latter to beyond the midline. Here a sulcus was recognised encircling the isthmus. A stay-suture was introduced on its right side; the isthmus was divided through it in a perpendicular manner and the left segment was removed (Fig. 4). There was very little bleeding. Using the stay-suture to overcome the retraction of the isthmus, a mattress-suture of catgut was passed through the stump about half an inch from its end and tied. This effectively controlled the oozing. The edges of the stump were approximated, as well as possible, by a series of six interrupted catgut sutures. The abdominal wound was closed in two layers, a tube being delivered through the upper end. The perfect relaxation obtained by the spinal anæsthetic greatly facilitated the operation, particularly when dealing with the isthmus.

FIG. 4

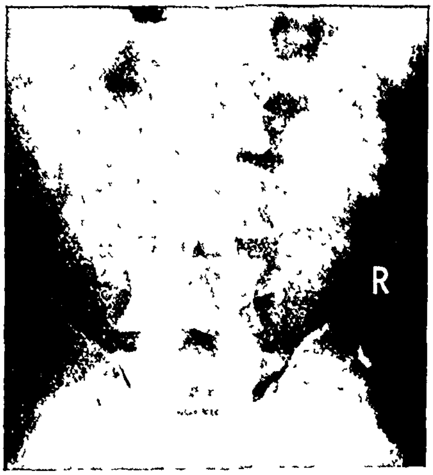


Photograph of the resected segment from Case 4. The upper pole is the seat of a large ulcerocavernous focus, indicated externally by a large boss. Note the dilated thickened ureter passing in front of the isthmus. Glass rods have been placed in the two vessels passing to the hilum.

For the first two days after the operation the patient was troubled with flatulence. This was relieved by enemata. The tube was removed on the fourth day. On the eleventh day a purulent, sanguineous discharge appeared at the site of the drainage and, later, the middle portion of the wound broke down. A specimen of urine taken from a 24-hour collection, ten days after operation, was negative for tubercle bacillus, and a guinea-pig killed six weeks after inoculation from the same specimen was negative for tubercle. There was a very quick improvement in the rate of urinary frequency, the patient being able to hold his water for three to four hours within a few days of the operation. He was transferred for a period of sanatorium treatment three weeks after operation, with a purulent discharge still coming from the wound. A report from his doctor in August, 1932, stated that the wound was granulating, but was not quite healed. There was no urinary discharge from it. The frequency was three- or four-hourly during the day, and twice at night.

CASE 5.—A man aged 28, a labourer, was referred to the department in April, 1932, complaining of recurring attacks of left renal pain of nine weeks' duration.

FIG. 5



Intravenous pyelogram of Case 5. The pelvis of the right segment appears more dilated than that of the left, the side of the ureteric calculus.

Chemical examination of the urine was negative, and a preliminary radioscopy of the urinary tract proved negative for calculus. A catheter passed up the left ureter was obstructed at 20 cm., however, and a radiogram taken with the catheter in situ showed a small stone at its tip. Sodium iodide (20 c.cm.) was injected into the renal pelvis without causing any uneasiness, and the resulting pyelogram showed a typical horseshoe kidney appearance, with slight dilatation of the pelvis and clubbing of all the calyces. An intravenous pyelogram (Fig. 5) was later made, using 20 c.cm. of uroselectan B. This pyelogram confirmed the diagnosis of a horseshoe anomaly, but showed a greater degree of dilatation in the right pelvis than in the left.

Operation.—Under spinal anæsthesia (percaine 14 c.cm.) an extraperitoneal exposure was made through a curved lumbar incision. The isthmus was seen to consist of thick parenchymatous tissue. The ureter lay anterior, and a stone could be felt within it, about an inch below the lower border. The renal pelvis was seen to be slightly dilated. The stone was removed through a small vertical incision in the ureter, which was then closed by two Lembert-like catgut sutures. A small drainage-tube was brought out through the lower end of the lumbar wound. There was no urinary leakage and the tube was removed on the second day. The patient was dismissed to the convalescent home on the twelfth post-operative day, with the wound completely healed.

DIAGNOSIS

In the presence of renal disease requiring operative intervention, the pre-operative knowledge of the existence of a horseshoe anomaly is a tremendous advantage, particularly in approach. To those experienced in the interpretation of pyelograms, diagnosis should, in most cases, be easy. The only other condition familiar to me which might give rise to confusion is an anomaly of rotation. When this occurs in an excessive degree, the convex border is mesial and the pelvis faces laterally. The pyelogram of such a kidney would show the calyces directed towards the spinal column. As, however, both kidneys are not usually rotated, the pyelogram of the partner kidney would be likely to have a normal appearance. The important diagnostic features of a horseshoe kidney pyelogram are as follows:—

(a) The shadow lies closer to the midline than in the normal, and is usually lower.

(b) The pelvis and calyces are of a bizarre shape.

(c) One or more of the calyces on each side points towards the midline or downwards, and some of the calyces may overlap the shadow of the pelvis.

(d) The upper end of the ureter curves outwards from and then inwards to the vertebral column.

Pyelography is the only reliable diagnostic method. A plain radioscopy might be suggestive by indicating a loss of outline of the psoas shadow, and failing to visualise one or other of the renal poles. There is no syndrome of symptoms and signs characteristic of horseshoe kidney.

SURGICAL TECHNIQUE

Diseases involving a horseshoe kidney should be treated in the same manner as similar diseases in kidneys normally formed. If resection of the affected segment is necessary this involves cutting through the isthmus, which is usually composed of parenchymatous tissue. Most urologists agree that the extraperitoneal lumbar approach is preferable to the abdominal route. By this method there is less likelihood of infecting the peritoneum, especially when dealing with a tuberculous or suppurative lesion, or when there is a possibility of urinary leakage after the operation. It is my custom to make an incision starting about an inch below the costovertebral angle. This is carried downwards and slightly forwards to a point about midway in the costoiliac space, whence it is made to pass forwards parallel with the iliac crest. The muscles and fasciæ are divided in the line of the incision, which can be prolonged as far towards the midline as seems necessary to give a free exposure of the isthmus. The complete muscular relaxation obtained by spinal anæsthesia greatly facilitates the access. Methods of dealing with the isthmus have been described under Cases 1 and 4, in which resections were carried out.

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STARCH FERMENTATION BY THE "GRAVIS" TYPE OF DIPHTHERIA

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In a report on diphtheria types published in The Lancet Wright and Rankin[1] refer to difficulties they have met with in detecting the fermentation of starch by diphtheria bacilli. One of the general conclusions suggested by their paper is that "gravis" strains of the diphtheria bacillus are either absent or very rare in the Edinburgh area. Inasmuch, however, as they do not state definitely whether the gravis strains which they had received from Leeds did or did not ferment starch in their hands, the general impression left by their paper is far from clear.

They maintain that filtered solutions of starch should be used for fermentation tests because starch is readily hydrolysed when its solutions are heated for the purpose of sterilisation. Our own experience has been entirely at variance with this finding. But in view of this statement it seemed desirable to re-examine the behaviour of starch solutions when heated in a variety of ways.

In the work already published (Anderson, Happold, McLeod, and Thomson[2]) on this subject, the method invariably used has been to add sterile autoclaved 5 per cent. solution of British Drug Houses soluble starch to serum peptone water previously sterilised by repeated steaming at 100° C., in amount necessary to bring the final concentration of starch in the medium to 1 per cent. Latterly[3] we have often worked with serum peptone water in which the starch solution was incorporated before commencing the sterilisation by intermittent heating. Such media have never shown any acid reaction when the types of diphtheria bacilli described as "mitis" or "intermediate" are grown in them for a week or more, and inasmuch as both these types of strain attack maltose, which is one of the products of hydrolysis of starch, it scarcely seemed likely that any appreciable hydrolysis of the starch was taking place under the conditions described.

OBSERVATIONS ON FERMENTATION

The point, however, has been raised, and is important for the differentiation of gravis strains. Results obtained both before and after the publication of Wright and Rankin's paper are the following:—

Fermentation of starches of different origin.—The following products were used: (B.D.H.) maize, wheat, potato, and rice starches. These were dissolved in boiling water, autoclaved at 115° C. for 20 minutes as 5 per cent. solutions, and then added in the required amount to serum peptone water (pH 7·8) previously sterilised by intermittent steaming. Four strains previously determined to be starch-fermenting, and eight non-starch-fermenting strains were grown on all four products. All four gravis strains fermented all the specimens of starch with clotting of the proteins of the serum peptone water within 36 hours; whereas none of the other strains had produced any change of reaction after a week's incubation.

Effect of heat sterilisation at different reactions.—One per cent. solutions of starch in 0·1 per cent. Na_2HPO_4 and 1 per cent. peptone of the following reactions, pH 6·0, 7·2, 7·5, and 8·2 were prepared; these were autoclaved for 20 minutes at 115° C. These media, after the necessary adjustments of reaction, were tested for growth and fermentation with various diphtheria strains. No change in the fermentative effects exerted by gravis and other diphtheria strains was observed. This was equally the case when heated serum was added to produce freer growth of the bacteria.

The detection of the products of hydrolysis in complex media by chemical methods cannot readily be made a very delicate observation owing to the reducing action of some component of the peptone; but we failed to find any difference between tubes with and those without starch. Further, the examination of an autoclaved aqueous 5 per cent. solution of starch by Fehling's and Benedict's methods gave no evidence of hydrolysis. If, however, unheated serum is added to any one of these starch-containing media, and it is then inoculated with diphtheria bacilli and incubated, it is found that all types of strain produce fermentation. The starch is split by the diastase of the serum on incubation at 37° C., and the mitis and intermediate types of diphtheria bacilli which cannot attack unaltered starch readily produce acid from the products of its hydrolysis.

We must therefore say that we are completely at a loss to understand the difficulty in determining starch fermentation which Wright and Rankin describe. The only three likely sources of error which we have been able to determine are :—

(1) The addition of unheated serum to the medium.
(2) The use of a soluble starch in which the treatment with acid has been carried too far, and resulted in partial hydrolysis.
(3) The use of fluid media with a basis of meat extract, since all diphtheria bacilli can split acid from some of the compounds in meat extract.

The media recommended in our original paper fulfil the two essential requirements—free growth of the bacilli and constant reaction in the absence of added fermentable substance.

TYPE OF ORGANISM AND CLINICAL FINDINGS

A general summary of the views which we advanced a year ago and of the criticisms of these views recently brought forward appeared as an annotation in the same issue of THE LANCET as Wright and Rankin's paper. Without doubt the classification of diphtheria bacilli along the lines which we have suggested must be established ultimately on the corroboration of those findings by other workers, and in other places.

We believe, however, that it is a mistake to suggest that the only evidence available in favour of this conception is that obtained in Leeds.

From the papers of Parish, Whatley, and O'Brien,[4] and of Wright and Rankin, and from our own observations, it appears that gravis infections have played an important part—i.e., have been the most frequent type of infection in Berlin, Frankfort, Cork, Hull, and Leeds, in all of which places diphtheria has recently been severe and in some cases remarkably formidable; whereas in London, Scotland, and Copenhagen, where starch-fermenting strains are rare, diphtheria has been relatively mild. The case death-rate in the centres where gravis infections have been common has fluctuated between 8 per cent. and 20 per cent.; whereas in those areas where they are uncommon no case death-rates exceeding 6 per cent. have been recorded recently.

It is rather too readily assumed that severe outbreaks of diphtheria may be explained away on the ground of insufficient or tardy serum therapy. It may be that here and there an unusually high death-rate from diphtheria can be explained in this way, but it seems to us altogether improbable that this will be the explanation of a high death-rate persisting over a considerable period in a community of some size. The whole tendency is in the other direction, for there is an unusual atmosphere of alarm in connexion with inflammations of the throat, and many practitioners send suspected cases of diphtheria to the fever hospital without waiting for a bacteriological report.

The following figures, based on the experience of diphtheria in Leeds, illustrate this point. In 1928 diphtheria was mild, mortality 3·3 per cent.; in 1931 it was severe, mortality 9·2 per cent.; and the following Tables are compiled from the records of the Leeds City Hospital. Table I. shows the duration of the illness before antitoxin treatment was commenced.

It is commonly assumed that when antitoxin treatment is commenced *within* 96 hours of the onset, there is a reasonable chance of recovery. The average duration of illness before the administration of antitoxin in fatal cases was 4·1 days in 1928 and 3·0 days in 1931.

TABLE I

Duration of illness before commencement of antitoxin treatment.	Percentage of all cases.			
	1928.		1931.	
Under 24 hours	2·7	67·5	4·4	75·2
24 hours – 48 hours	21·6		23·3	
48 „ – 72 „	23·2		27·9	
72 „ – 96 „	20·0		19·6	
Over 96 hours	32·5		24·8	

The proportion of early to late deaths in diphtheria in the two years is given in Table II.

TABLE II

Duration of illness before commencement of antitoxin treatment.	Percentage of deaths.	
	1928.	1931.
Under 96 hours	46·1	68·2
Over 96 „	53·9	31·8

SIGNIFICANCE OF THE LEEDS FINDINGS

There is a tendency on the part of those who criticise the differentiation of gravis and mitis types of the diphtheria bacillus to assume that the finding of a number of fatal cases of mitis infection on the one hand, and of mild gravis infections on the other, disposes of the claim which we have put forward. It is desirable, therefore, to state afresh what we consider to be the significance of the findings which we have made in Leeds.

For the last two years the form of diphtheria bacillus predominant in Leeds has been a starch-fermenting form, growing with marked pellicle formation and coarse granular deposit in broth, and the results of serum treatment in cases due to this type of bacillus have been disappointing. Examination of diphtheria strains, 46 obtained from Berlin, and 1, described as the only form occurring in Posen, has shown that in these areas also the gravis type of diphtheria bacillus is common. It has been assumed, therefore, as probable that this is the type of diphtheria bacillus specially responsible for the very grave epidemics of diphtheria so resistant to serum treatment that have been reported from the continent of Europe during the last three or four years. By contrast, the next most numerous type of diphtheria bacillus in Leeds, which is a non-starch-fermenter, grows abundantly on the usual bacteriological media, and produces a uniform and usually copious turbidity in broth, has not till now in our experience produced death in any case which has been admitted to hospital soon enough to receive serum treatment. It has been assumed as probable that the findings in Leeds, as far as the contrast between the gravis and mitis types of diphtheria are concerned, would prove to be of general application.* That assumption is not invalidated by determining that (*a*) in some areas the bacteriology of diphtheria is quite different from that in Leeds—e.g., that the intermediate form present to the extent of 5 per cent. in Leeds is the most numerous type in Glasgow; nor that (*b*) some mitis infections coming under treatment *late* in the disease have died, as, for instance, those quoted in the Edinburgh paper.

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* It is scarcely likely that no death in 100 cases of serum-treated mitis infection will often be recorded as it has been in Leeds—this is probably exceptional. We do expect, however, that a low death-rate will prove to be the rule in the mitis type of infection.

Extensive investigations of diphtheria along the lines of the classification which we have suggested are now in progress in several centres outside Leeds, and a more convincing verdict on this subject should result. Meanwhile, however, it has seemed desirable to us to state that we see no reason at present to modify the main conclusions already published on this subject.

Throughout Yorkshire infections with the gravis bacillus are now common, and often extremely formidable, and although there is no immediate prospect of a serum therapy better adapted to these infections, we would emphasise that the nasal carriers appear to be very important agents in spreading such infections, and might well be more effectively controlled than they are at present. Rapid discrimination between the gravis strains and other diphtheroid bacilli of the nose is considerably facilitated by the use of the medium which we have introduced.

We have pleasure in thanking the Medical Research Council for a grant for expenses, and also for a personal grant made to two of us.

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ANÆSTHESIA IN TROPICAL SURGERY

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THE difficulty of obtaining good general anæsthesia for surgical operations has always been one of the constant trials of medical work in the tropics. This difficulty is particularly marked in a country such as the Anglo-Egyptian Sudan, in which there are great variations of temperature and humidity, a shortage of experienced medical staff, and a backward and primitive race supplying the majority of the patients. There is, amongst native Sudanese patients, an almost universal dread of losing consciousness under an anæsthetic, a dread compounded of fear of the unknown and a belief that the soul actually leaves the body and may have difficulty in finding it again. There is sometimes also a tincture of doubt as to what mutilation may be in store for the unconscious and helpless patient. The relief with which the information that an operation can be performed without loss of consciousness and without pain is received by such patients contributes greatly to that hopeful outlook which is of such enormous value in the treatment of the African native.

The technical, as apart from the psychological, difficulties of general anæsthesia may be summarised as follows:—

Chloroform, the most dependable of available anæsthetics, is nevertheless dangerous in unskilled hands, and few native medical officers become really dependable in its use. Further, its toxic effect in prolonged anæsthesia is a very real danger, particularly in view of the commonness of hepatic and renal deficiencies in tropical patients.

Ether is very unreliable owing to the great variation in its rate of evaporation following atmospheric changes. It loses bulk rapidly in hot weather, and is apt to explode. Its use needs considerable skill, especially when in combination with chloroform, for the relative strength of the two drugs is continually changing as the ether evaporates. Closed ether appliances seldom survive the climate for more than a few months, on account of the loss of elasticity of the rubber bags or connexions. Ether readily causes bronchial irritation in hot, dry weather. The most useful mode of administration is by the rectum mixed with olive oil.

Nitrous oxide.—Both nitrous oxide and oxygen are impossibly expensive, as they have to be obtained from Europe, and the cylinders lose half their contents in transit.

Ethyl chloride is definitely dangerous unless given in measured quantity from a rubber bag, which rapidly loses elasticity.

Avertin has the very grave objection that skilled attention is needed for at least half an hour before operation, and often for 24 hours after it. It is therefore almost ruled out as a routine anæsthetic in the primitive conditions of nursing found in most parts of this country.

The solution of many of these difficulties has been found to lie in the increasing use of local and spinal anæsthesia; the following are the most striking of the many advantages.

(1) The minimum of shock with the maximum of relaxation.

(2) The almost complete absence of post-anæsthetic vomiting. This is of great value both from a physical and a psychological aspect. The patient usually sleeps well, and can take fluids and solid diet much earlier than after general anæsthesia.

(3) Preparatory and after-treatment are simplified. Many cases can be admitted and sent home on the day of operation, thus economising beds.

(4) One skilled assistant the less is needed.

(5) The coöperation of the patient during the operation is often of great assistance—e.g., a timely cough in locating a hernial sac and the movement of fingers in a tendon suture.

These advantages are, of course, familiar to all surgeons, but work at a distance from the refinements of skilled assistance and nursing lends them such added value as to warrant the emphasis used.

SPINAL ANÆSTHESIA IN ABDOMINAL OPERATIONS

Spinal anæsthesia is the anæsthesia of choice for major abdominal operations on patients who are not profoundly shocked, cachectic, or very old; in other words, for those who are reasonably good "risks," and can tolerate the inevitable drop in blood pressure. After considerable experience of stovaine, novocain, and spinocaine, we have found neocaine, given by the method described by Koster and Kasman,[1] the most reliable. Over 200 operations have been done under this anæsthetic in the Khartoum and Omdurman Hospitals without any untoward event referable to the drug, and with uniformly satisfactory results. Briefly, the method used is as follows:—

After a preliminary injection of morphia, the interval between the first and second, or second and third lumbar vertebræ is punctured with a fine needle and a quantity of cerebro-spinal fluid is drawn off and mixed with the crystalline neocaine in the glass ampoule in which it is supplied. The solution is then injected slowly through the needle which has been left in place.

For an adult of average weight: 10 mg. of neocaine in 4 c.cm. of fluid give anæsthesia up to the umbilicus; 15 mg. of neocaine in 6 c.cm. of fluid give anæsthesia up to the costal margin; 20 mg. of neocaine in 8 c.cm. of fluid give anæsthesia up to the clavicle.

Immediately after injection the patient is placed in the Trendelenburg position to counteract the cerebral anæmia which follows the invariable drop in blood pressure, and the operation may start within five minutes. Complete anæsthesia lasts for about an hour; if the operation is not completed within this time, novocain may be injected into the peritoneal edges, or a little chloroform given. If there is nausea or retching the head of the table is still further lowered and, if they persist, ephedrine is injected, though this is not often needed. After return to the ward, the head should be kept low until the pulse has recovered its volume. No cases of headache have occurred in this series. This is attributed to the use of a fine needle. The following case illustrates some of the advantages of this form of anæsthetic.

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[1] Koster, H., and Kasman, L. P.: Surg., Gyn., and Obst., 1929, lix., 6.

A male native, aged 35, was admitted with a history of sudden onset two hours previously of epigastric pain of an agonising character, with vomiting and collapse. For two years previously there had been intermittent pain when the stomach was empty. There was board-like rigidity of the upper abdomen, a subnormal temperature, and a pulse-rate of 80, the pulse being of fair volume.

A preparatory injection of morphia, gr. ¼, had little effect upon the pain, but 15 mg. of neocaine in 6 c.cm. of cerebro-spinal fluid intrathecally produced complete relief from pain and a flaccid abdomen in five minutes. The patient retched once or twice while the abdomen was being opened, but subsequently went to sleep; a perforation in the posterior wall of the duodenum was closed, and a gastro-jejunostomy was performed under advantageous circumstances. Except for some paralytic ileus on the second and third days, the patient made an uneventful recovery.

A constant feature in abdominal cases thus anæsthetised is the contracted state of the intestines (except where there is paralytic or obstructive ileus); the abdominal contents not required can be packed away with ease, thus facilitating intra-abdominal manipulations.

LOCAL ANÆSTHESIA IN ABDOMINAL OPERATIONS

In abdominal work local anæsthesia is most useful: (1) in operations not entailing much handling of viscera—e.g., straightforward appendicectomies, colostomy, ventral hernia; (2) in cases where, owing to shock or debility, the patient is a doubtful risk under spinal or local anæsthesia; and (3) in infants. The technique, in outline, consists in:—

(1) Infiltrating the line of the incision by sub- or intracuticular injection of 1 per cent. novocain, made up with fresh adrenaline, 5 drops to the fluid ounce.

(2) Blocking the cutaneous nerves by a zone of infiltration into the muscle layers, particularly in the neighbourhood of the nerves (intercostal, ilio-hypogastric, ilio-inguinal).

(3) Anæsthetising the peritoneum. This is best done after exposure of the transversalis fascia, or posterior sheath of the rectus, when novocain can be injected beneath it, in contact with the peritoneum.

Novocain injected into the mesentery will usually relieve pain due to manipulation of viscera.

The quantity required is usually between 1 and 2 fluid ounces of the 1 per cent. solution, but more can be used without danger provided that: fresh, unboiled adrenaline solution is added in the strength mentioned; and care is taken that no appreciable quantity is injected directly into a vein.

A native boy of 9 was admitted with a history of colicky pain in the abdomen, beginning with vomiting 12 hours previously. Examination showed a tumour just above the umbilicus and visible small gut peristalsis. There was fæcal vomiting and collapse. After an injection of morphia and local infiltration with 1 per cent. novocain, a right paramedian incision allowed a 12-in. intussusception of the jejunum to be delivered and reduced by manipulation. The intussusception had started at a tumour of the gut wall the size of a walnut; this (a lymphosarcoma) was resected, and an end-to-end anastomosis was done at a subsequent operation under a spinal anæsthetic.

GENERAL OPERATIONS

The following notes indicate the general lines of the procedure used.

Abscess.—Many of the smaller types of abscess, and particularly cold abscesses, can be opened almost painlessly through an incision previously injected intracutaneously with 1 per cent. novocain. Subcutaneous injections should not be used, as the solution will either enter the abscess cavity, where it will be ineffective, or will be forced into the surrounding zone of hyperæmia, where introduction will be painful and possibly dangerous.

Amputations.—The fingers and toes are easily removed after encircling them with a band of hypodermic injection, a little novocain being introduced more deeply over the line of the nerves. The same method serves for removing ingrowing toe-nails and for opening whitlows, but in the latter case care should be taken not to cause venous congestion by injecting too much of the solution, or pain will result.

For amputating limbs, in addition to the encircling subcutaneous injection, the nerves must be blocked by injecting a considerable quantity of novocain into their neighbourhood or, where practicable (as in the upper arm), by exposing them and injecting the trunks under direct vision. This method is extremely valuable in the emergency amputation of crushed limbs.

Inguinal hernia.—Hernia offers one of the easiest and most useful opportunities for local anæsthesia. After subcutaneous or intracuticular injection of the line of incision, the needle is introduced at a point about 2 cm. internal to the anterior superior spine and is carried deep to the fascia of the external oblique, and the ilio-inguinal and ilio-hypogastric nerves are blocked with 4 or 5 c.cm. of anæsthetic. Deep injections can then be made round the internal ring, to anæsthetise the peritoneum and cord, or the neck of the sac and genital branch of the genito-crural nerve can be injected after the inguinal canal has been opened.

Hydrocele and varicocele.—These are easily dealt with by (1) injecting the line of incision as described, and (2) blocking the genital branch of the genito-crural and sympathetic nerves by picking up the cord between the fingers and introducing 3 or 4 c.cm. of solution into it.

Tumours of the lower jaw and tongue.—Local anæsthesia here has the enormous advantage of the collaboration of the patient in spitting up blood which would otherwise find its way into the lungs. A preliminary tracheotomy is unnecessary, and the anæsthetist's intrusions are obviated. For the lower jaw one or both inferior dental nerves are blocked by injection of 3 or 4 c.cm. of novocain into the neighbourhood of the nerves as they lie near the lingula on the inner surface of the mandible, the needle being introduced in line with the opposite canine and following the plane of the biting surface of the teeth until the lingula is felt. A hypodermic encircling injection is then made into the face, enclosing the area of the operation.

Hemi-section of the tongue.—This can conveniently be carried out, if the anterior two-thirds only are involved, by blocking both inferior dental nerves as described above, and also the lingual nerves as they lie on the floor of the mouth.

Madura.—The use of local anæsthesia should be confined to the removal of very small early madura, which can be encircled by a hypodermic injection without risk of penetrating the growth. If the injection penetrates, as it easily may in larger growths, the consequent œdema makes differentiation difficult. The larger growths also need a bloodless field only obtainable with a tourniquet, for which general or spinal anæsthesia is necessary.

Skin grafts.—Thiersch grafts are conveniently cut by encircling the area from which the graft is to be taken with a weal of subcuticular injection of 1 per cent. novocain.

A native man, 50 years of age, entered hospital with a tumour of three months' duration projecting from the external surface of the left mandible. There was an indurated ulcer on the external alveolus opposite the premolars, and the submaxillary lymphatic glands were enlarged but soft. After removal of the teeth, morphia and hyoscine were injected and the left inferior dental nerve blocked inside the mouth with 5 c.cm. of 1 per cent. novocain. A line of subcuticular injection of the same solution was next described round the tumour, and carried forward to the symphysis mentis. Through an incision carried back from the angle of the mouth, and dividing to include the skin adherent to the tumour, the whole mass, together with the body of the mandible from the symphysis to the angle, was removed in one piece. The divided skin and mucosa were sutured. Healing occurred by first intention, and the glands gradually subsided. The growth proved to be an epithelioma invading the bone.

SPINAL ANÆSTHESIA IN GENITO-URINARY OPERATIONS

Spinal anæsthesia is of inestimable value in *suprapubic prostatectomy* on account of (*a*) the excellent relaxation, (*b*) the absence of shock and toxic action on the kidneys, and (*c*) the almost total absence of hæmorrhage due to the fall in blood pressure. If the removal is not done under direct vision and the prostate bed sutured, care must be taken that reactionary hæmorrhage does not follow the rise in blood pressure some hours after operation. In many cases it is advisable to anticipate this by exerting pressure on the prostate bed by means of a hæmostatic bag or gauze plug attached to a catheter in the urethra to which a weight can be suspended.

LOCAL ANÆSTHESIA IN GENITO-URINARY OPERATIONS

Ligature of hæmorrhoids.—Piles can be satisfactorily ligated under local anæsthesia, which gives better relaxation of the sphincter than even deep general anæsthesia; the relaxation appears to last longer with the former method, thus giving freedom from pain after operation. The anus is first encircled by a weal of subcutaneous 1 per cent. novocain. One finger is then placed in the anal canal, and under its direction a needle is passed, at intervals of about 2 cm., deeply into the sphincters and under the anal mucosa, 2 c.cm. being injected at each spot. The needle point should be kept moving so as to avoid injecting into the veins. After a few minutes the sphincter will be found relaxed, and the operation can proceed.

Suprapubic cystotomy.—Either for the removal of calculi, or as a preliminary to prostatectomy, suprapubic cystotomy is easily performed under local anæsthesia provided that novocain can be injected via the urethra. It is particularly useful in the case so often already on the edge of uræmia, in which there has been long-standing prostatic obstruction. Ten to twenty cubic centimetres of 5 per cent. novocain with two drops of adrenaline are first injected into the bladder with an ordinary urethral syringe, the bulbar urethra being massaged to pass the solution upwards. A hypodermic weal is next formed along the line of the suprapubic incision with 1 per cent. novocain, a little being also introduced beneath the rectus sheath. The bladder is then exposed in the usual way, a further injection being made into the thickness of its wall before it is opened. If the peritoneum has to be stripped up, as is sometimes the case in contracted bladders, it should first be infiltrated with novocain.

Fistula in ano.—This is treated as for hæmorrhoids.

LOCAL ANÆSTHESIA IN EYE, NOSE, AND THROAT OPERATIONS

Many operations on eye, nose, and throat are so commonly performed under a local anæsthetic that no comments are needed. The following, however, may be less familiar.

Trichiasis.—The operation of splitting the inverted lid margin and tarsal plate and inserting into the cleft an epithelial graft from the lip can be done under local anæsthesia as follows. The conjunctival sac is anæsthetised by instillation of cocaine drops at half-hourly intervals thrice in the ward, morphia being given with the third. On the table, the lid affected is injected with 2–3 c.cm. of 1 per cent. novocain, a little being also introduced with a fine needle into the conjunctiva of the under side of the lid. The lip which is to provide the graft will also need an injection of 2 or 3 c.cm.

Enucleation of the eye.—This can be done painlessly by injecting 1 or 2 c.cm. of 1 per cent. novocain to the neighbourhood of the otic ganglion, the needle being passed inwards along the outer wall of the orbit for a distance of 2 cm. and then a little towards the nasal side. A little solid cocaine may also be placed in the conjunctival sac and, if there is blepharospasm, the lids should be injected with novocain.

CONCLUSIONS

It is emphasised that no originality is claimed for any of the procedures or technique described, all of which are fully described in text-books of local anæsthesia. Of these, the writer has found Farr's [2] to be the most useful. The intention has been to give a brief account of the type of case found most suitable for spinal and local anæsthesia in a general surgical practice in the tropics.

I wish to acknowledge the courtesy of the director of the Sudan Medical Service in allowing me to publish this paper.

FAMILIAL HEPATOMEGALY OF UNCERTAIN PATHOLOGY

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AND
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The following report of a case of hepatomegaly in a child embodies certain clinical and pathological data, not previously recorded in this country, and for which we were long unable to find any adequate explanation. A recent search of foreign literature has revealed, however, two cases which have somewhat similar pictures; an abstract of one of these is appended.

Our patient was a boy, aged 6 years, who was admitted into the Queen's Hospital for Children on Feb. 16th, 1931, for cough, breathlessness, and abdominal pain.

History of the Case.—The mother had first noticed some enlargement of the abdomen at the age of 1 year and 3 months and since that date the child had been almost constantly in hospital. Various diagnoses appear to have been made, such as enlarged liver and spleen, cirrhosis of the liver, and, finally, while under the care of one of us at the Queen's Hospital, he was shown at the section for the study of diseases of children of the Royal Society of Medicine in April, 1931, as a case of Gaucher's disease. This last diagnosis was founded on the recovery of tissue pulp, containing large clear cells, from what was thought to be splenic puncture, but which in reality was obtained by puncture of an enormously enlarged left lobe of the liver. The pitted scar following this operation was visible at the post-mortem.

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[2] Farr, R. E.: Practical Local Anæsthesia, London, 2nd ed., 1930.

Hæmatemesis and epistaxis were recorded as having occurred prior to admission to other hospitals, but these were not noticed during the ten months that the patient spent in the Queen's Hospital. There had never been any jaundice, but cough and breathlessness had been a marked and increasing symptom for two years. More recently the cough had been very severe, and was accompanied by a profuse and fœtid expectoration.

Clinical Notes.—On admission to hospital this child presented a curious facial appearance, and bodily development, which is well shown in the accompanying photograph (Fig. 1). He was undersized—height 3 ft., weight 2 st. 6 lb. The head was abnormally large, the face fat and flabby. The abdomen was enormously distended, while the rest of the trunk and limbs were poorly covered. The muscular development of the lower limbs was particularly poor, and there was marked knock-knee and flat-foot. The skin of face, trunk, and limbs was pigmented a deep brown; the hands and feet were a dark ashy grey colour. This pigmentation steadily increased, so that shortly before death the boy resembled a mulatto. There was a profuse growth *of hair on the head and on the trunk and the back, and* the limbs were covered with a fine downy hair. Mental development was considerably retarded; speech was limited and defective. Jaundice was absent, and stools and urine were normal. There was some clubbing of the fingers, but this could be explained by the presence of an advanced fibrosis and bronchiectasis affecting both lower lobes. The child was subject to violent and paroxysmal attacks of coughing in which large quantities of fœtid sputum were expectorated.

The abdomen was prominent and hard. The liver was greatly enlarged, the liver border reaching to the crest of the ilium on the right side and passing thence obliquely upwards to the left to merge with what was thought to be a large spleen. This apparent splenic enlargement filled the whole of the left hypochondrium, and extended thence downwards and forwards to just below the level of the umbilicus. *Its antero-internal border appeared to present a* typical splenic notch. Dullness was continuous upwards into the left axilla to the level of the nipple. This presumed enlargement of the spleen was shown at autopsy to be a greatly enlarged left lobe of the liver. The surface of the liver was smooth, the edge hard. There was no ascites.

The stools on admission were a little loose and pale, but later showed no abnormal characteristics, and the fat content was normal. Neither kidney was palpable, and the urine was clear, contained no albumin, no sugar, no casts, and was free from bile. The usual physical signs of an advanced fibrosis and bronchiectasis were present in the lungs, and occasional exacerbation of a pneumonic character appeared to take place, so that at the end the major part of the right lung was affected in addition to the left lower lobe.

The heart presented no abnormal features; the blood pressure was 110 systolic. The blood count, which was done on several occasions, gave the following readings respectively on Feb. 22nd and April 24th, 1931:—

R.B.C. ..	3,540,000	R.B.C.	3,970,000
W.B.C. ..	.. 15,733	W.B.C.	.. 20,400
Hb.	.. 77 %	Hb.	.. 51 %
Differential—		Differential—	
Polymorphs	.. 40 %	Polymorphs ..	.. 39 %
Lymphocytes	.. 52 %	Lymphocytes ..	.. 50 %
Hyaline ..	.. 8 %	Large mononuclear	.. 4 %
		Mast cells ..	.. 2 %
Megaloblasts	.. 8 %	Myelocytes ..	.. 5 %
		Two megaloblasts	

The blood-urea was 18 mg. per cent.; blood-sugar, 95 mg. per cent.; blood cholesterol, 220 mg. per cent.; van den Bergh, direct and indirect, was negative; Wassermann, negative; fragility of red cells, normal.

On Dec. 27th, 1931, *the patient, while coughing,* was seized with violent abdominal pain, and collapsed and died.

POST-MORTEM FINDINGS

The *abdomen* contains about 6 oz. of clear yellow fluid. The cavity is almost completely filled by the liver, which descends to the pelvic brim on the right side, and to within two inches of it on the left side. It weighs 2500 g. It is nowhere adherent. The normal division into lobes is preserved. It is smooth, firm, pale buff in colour. Its edges are well-defined. Its consistency is that of hard rubber. On incision, the cut surface is smooth, homogeneous, very dense, and somewhat translucent. On close inspection some very minute pale yellow areas are seen to be distributed evenly throughout. The portal tracts appear collapsed, no dilatation of ducts observed. The gall-bladder looks normal and contains about a drachm of viscid bile. Test for amyloid disease negative. The *spleen* weighs 75 g. Its capsule is shrunken, and the splenic pulp is rather soft and vascular. The cut surface is homogeneous. *Kidneys* are congested and slightly enlarged, suprarenals normal. The pancreas is normal.

Thorax: Heart dilated and fixed by adhesions to the right and left pleura. *Lungs* show fibrosis and bronchiectasis. No normal lung tissue to be seen. An abscess cavity *is present in the lower part of the left upper lobe.* Radiating from the hila are clusters of soft enlarged glands which penetrate the lung tissue for a considerable distance and appear to surround the bronchioles in their finer ramifications. From the hila these can be traced up the lateral aspect of the œsophagus and trachea as far as the thyroid gland. In appearance they resemble hæmolymph glands.

Sections of the liver stained by hæmatoxylin and van Giesen show under low power a structure very unlike the normal. Division into lobes and lobules is ill-defined, especially at the periphery, due to the invasion of the liver parenchyma by fine strands of connective tissue. There is a condensation of connective tissue in the portal areas with consequent compression of the smaller ducts, but no pericellular invasion by connective tissue. There is some cellular reaction in the portal spaces.

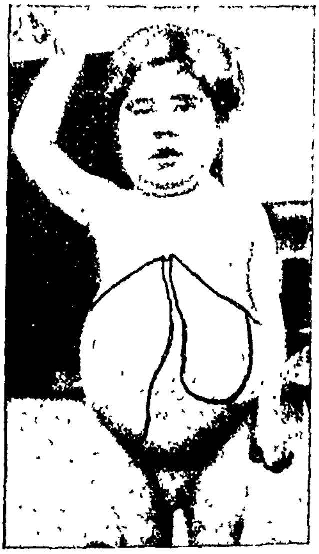
Under the high power (Fig. 2) the most striking features of the sections are: (1) the emptiness of the individual liver cells; (2) their increase in size—sometimes to two or three times the normal; (3) the preservation of the nucleus in most cells; (4) the increase in connective tissue in the region of the portal spaces; (5) the grouping of cells, in groups of 4 to 20, by fine connective tissue strands. Occasionally an area is seen where clusters of liver cells appear to contain a trace of protoplasm staining brown. The nucleus, in many cells, is represented by its nuclear membrane only.

In sections stained by Sharlach R most of the cells appear empty. Sharlach-positive material is present in some of the cells, and a considerable amount of neutral fat in the portal spaces. The substance in the liver cells consists of some material which is neither fat nor lipoid, and is not doubly refractile.

Sections stained by *Bielchowsky's method* failed to demonstrate the presence of a stroma, such as is seen in the cells in Gaucher's disease. This is interesting in view of the clinical diagnosis previously arrived at.

Sections stained for glycogen were negative. This was to be expected, owing to the rapidity with which glycogen disappears from the tissues after death and, unfortunately, alcohol was not used as a fixative.

FIG. 1

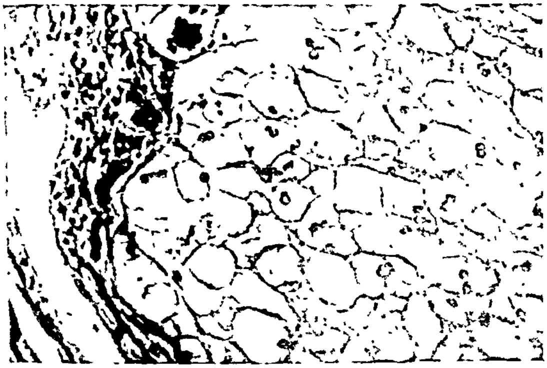


Photograph of child reproduced from Proc. Roy. Soc. Med. (1931, xxiv., 1031), where the case was reported by Dr. W. C. Hartston. At this time, as the marking shows, the swelling on *the left* was regarded as the spleen.

Chemical Examination of the Liver.—The dried material gave on analysis: ether extract, 1·202 per cent. of dry matter. The extract contained: free cholesterol, 0·728 per cent., which is within normal limits, but on the low side; cholesterol esters, 0·060 per cent., which is much below normal; fat and fatty acids, 0·414 per cent.

An inquiry into the family history showed that mother and father were presumably healthy. There were two other children, one an infant, alive, to whom we have been unable to get access, and the second, a girl, who also had a very enlarged liver, and who died of a terminal pneumonia at the age of 1 year and 8 months at Whipps Cross Hospital. The superintendent informs us that she was a thin rickety infant, suffering from diarrhœa and occasional vomiting. At the post-mortem the spleen was found to be only very slightly enlarged, but the liver was enormous, weighing 2 lb. 10 oz. The liver is described as having no typical parenchyma, and being in a state of extreme fatty degeneration. The similarity of this case to that of her brother, our patient, suggests that the condition may be familial in character.

FIG. 2



Microscopic appearance of liver section showing enlarged cells. (× 165.)

SUMMARY

The outstanding and unique features of this case appear to be: (1) the familial character; (2) the pigmentation of the body; (3) the absence of any insufficiency of hepatic function during life; (4) the naked-eye appearances of the liver in respect of size, colour, consistency, and entire absence of any resemblance on section to normal liver; (5) the abnormal histological character of the liver cells themselves.

A search through the literature of familial hepatomegaly reveals the fact that the case is of very great rarity. A similar one was described by E. von Gierke under the title of "Hepato-Nephromegalia glykogenica."[1] A child, aged 8, with considerable enlargement of the liver and a tendency to nose bleeding, who had had rickets, died of laryngitis. Post-mortem examination showed an enormously enlarged liver (2000 g.), and kidneys (245 g.), in addition to acute pulmonary changes. Microscopical examination showed that the cause of the hepatic and renal enlargement was an intense overloading of the parenchymatous cells with glycogen. Extract of the liver contained 1·60 per cent. free sugar and 10·43 per cent. glycogen. The dried substance contained 4·95 per cent. free sugar and 33·70 per cent. combined sugar. Extract of kidney contained 0·71 per cent. free sugar and 6·53 per cent. glycogen. Dried extract 3·91 per cent. free and 36·82 per cent. combined sugar. The most important part of the disease, therefore, was the exaggerated storage of glycogen, probably due to deficiency of the glycogenolytic factor, an error of metabolism, anenzymatosis or hypoenzymatosis. Besides the name given in the title, the name glycogen-storing disease may be used.

Von Gierke says: "Although we were unable to demonstrate glycogen in this case, owing to the fixative used, we are strongly tempted to suggest that the enlargement is due to glycogen storage." Menetrière and Rubens Duval[2] described a case resembling ours in its histological appearance, but in their case the infant was definitely syphilitic. They also suggested that the enlargement of the cells was due to distension with glycogen.

We are indebted to Dr. A. J. Gardner, of St. George's Hospital, *for chemical analysis, and to* Dr. J. G. Greenfield, of the National Hospital, for the microphotograph.

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[1] Beitr. z. path. Anat., 1929, lxxxii., 497–513.

[2] Archives de Médecine Expérimentale, 1907, xix., 405.

Clinical and Laboratory Notes

THE MODERN OPERATIVE TREATMENT OF DETACHMENT OF THE RETINA

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LESS than five years ago a diagnosis of retinal detachment was almost synonymous with a sentence of hopeless blindness on an eye so affected; it is true that various methods of treatment, operative and otherwise, had been advocated from time to time and that indeed some genuine successes had been obtained, but in practice these successes were found to constitute a sadly disappointing percentage of the number of cases treated. The method of procedure employed in most of the operations was to perforate the sclerotic with the purpose of draining away the subretinal fluid and so to obtain replacement of the retina. The point chosen for this puncture corresponded as far as possible with the centre of the area over which the retina was thought to be most separated from the underlying choroid. Perforation was usually made with the red-hot galvano-cautery, partly because of its hæmostatic effect but chiefly owing to the greater amount of inflammatory reaction produced by the cautery than by a cutting instrument; it was hoped that the retina after its reposition by evacuation of the underlying fluid would become adherent to the choroidal scar and so be anchored in place.

That rents or holes might occur in detached retinæ was a matter of common experience, and indeed some observers had gone so far as to say that retinal ruptures were present in all myopic detachments. To Jules Gonin, however, belongs the credit of having first pointed out in 1929 the significance of these retinal holes, and so to have laid the foundation upon which all modern work on retinal detachment has been based. Gonin showed that holes in the retina could be found clinically in almost all cases of retinal detachment if sufficient time and care were taken in searching for them, and that if the retinal hole were carefully located and the site of the cautery puncture in the sclerotic chosen so as to correspond accurately with the position of the hole, the percentage of successful results was enormously increased. He found that by placing the cautery puncture in this situation an adhesion between the area of retina surrounding the hole and the choroidal scar was obtained, and that in this way the hole in the retina became closed; also, that the success of the operation depended on the closure of the hole in the retina.

Those ophthalmic surgeons who adopted Gonin's operation soon found it to be a great improvement upon the older ones, as shown by the increased proportion of successes, but it soon became evident that this method was not entirely satisfactory. Not only was the exact localisation of the retinal hole a difficult matter, but even when this was successfully accomplished the hole was often too large to be covered by the scar of a single cautery puncture, and the operation had to be repeated perhaps more than once. Also, a single adhesion between retina and choroid over so small an area frequently proved to be insufficient, and for this reason a temporary success was sometimes obtained which was subsequently nullified by the tearing away of the retina from the adhesion, with consequent recurrence of the detachment.

Other methods were therefore devised with a view to producing a more extensive adhesion between retina and choroid. One of these is that practised by G. Guist; he advocates the removal of a number of discs from the sclerotic over an area larger than the retinal hole by means of a trephine, 1½ mm. in diameter, care being taken to leave the choroid coat intact. The choroid so exposed is then touched with a pointed stick of caustic potash through each trephine hole in turn, the caustic being at once neutralised by acetic acid. Finally, the subretinal fluid is evacuated by a single perforation of the choroid through one of the trephine holes. This operation gives fairly good results but has proved to be an extremely tedious and lengthy one, and as far as Moorfields is concerned it has been superseded by the method of S. Larsson, who uses the diathermy current to make the necessary series of choroidal scars over a sufficiently wide area. This method is rapid, easy of application, and like Guist's operation does not entail the careful localisation of the retinal hole. A suitable electrode is held in contact with the sclerotic for a period of about five seconds at each point in turn, the strength of the current having been so adjusted as to cause scarring of the choroid without perforating the sclerotic.

An area of sclerotic large enough to more than cover the extent of the retinal hole is thus treated and when this has been done a single perforation of sclerotic and choroid serves to drain away the subretinal fluid and to bring the retina into place.

I do not propose to give a detailed analysis of the cases treated at Moorfields, but a bald statement of my own results will show how encouraging those obtained by Larsson's method have been.

	Cases operated on.	Complete reposition of retina.
Gonin's operation	16	5
Guist's ,, ...	4	2
Larsson's ,, ...	10	8

I have purposely omitted from each section of this list a few cases in which the chances of success were not favourable from the outset, owing to the fact that no retinal hole was discoverable—several of these were cases of retinal detachment following removal of the lens which had been done some years previously. I have, however, included all those in which a retinal hole was present; some of the successful cases had to be operated upon more than once before complete reposition of the retina was obtained, especially among those treated by Gonin's method.

THE RESTORATION OF CENTRAL VISION

With regard to the question of restoration of central vision after operation, the limit of visual acuity obtained probably depends on two factors: first, whether the area of detachment has involved the macula, and secondly, the length of time during which such a detachment has been present. In one case of detachment of five years' duration (the longest period, as far as my cases are concerned, after which success followed operation) an acuity of 6/60 resulted. In most of my cases central vision has tended to show a gradual improvement for some time after the operation, and some patients have ultimately recovered good visual acuity.

It must, of course, be remembered that these operative measures are of very recent date and that several years must elapse before the subject can be regarded with a proper sense of proportion. In my opinion, however, such cases as have been kept under observation warrant the hope that the results obtained will in the main prove permanent.

SUBPHRENIC ABSCESS AND HEPATIC FRICTION

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A MAN of 52 had a sudden acute attack of pain in the right epigastrium, which spread to the right under the lower ribs. He did not vomit. When seen by a doctor two hours later the pain was acute, the temperature 100° F., and friction was audible *for about 4 inches above the right lower rib margin* in front. A diagnosis of pleurisy was made. The next day the pain was much less, the temperature 102°. The friction had gone, the breath sounds at the right base were diminished. During the week the man became steadily more ill, his tongue dry and brown, and his temperature 99° in the morning and 102° to 103° at night. Dullness had progressed up to above the angle of the right scapula. A needle had been inserted, but no fluid was found.

When I first saw him this dullness was marked, but, on deep inspiration, weak breath sounds and fine crepitations could be heard almost down to the base. In front there was diminished resonance in the right third and fourth spaces, but from the fifth space down to the rib margin resonance was tympanitic. On tapping one coin on another a bell note could be heard from the fifth rib down to an inch above the umbilical level in the right nipple line. This bell note area narrowed up to the ensiform cartilage, but widened towards the axilla. Breath sounds, which were fair in the upper chest, ceased suddenly where the tympanitic area began. The heart was pushed upwards and outwards, the apex being in the fourth space 1½ inches outside the nipple line.

This was evidently a subphrenic gas-containing abscess, and a needle inserted in the anterior axillary line in the eighth space let out foul gas and thin fœtid pus. Later, a portion of rib near the costal margin was removed, and a large abscess opened. A hard irregular ridge could then be felt across the right side of the abdomen about an inch above the umbilical level. Unfortunately the man died and no post-mortem was allowed, but this ridge must have been adherent, omentum and colon forming the lower limit of the abscess. The origin of the trouble was, almost certainly, a perforated duodenal ulcer with a slow leak, not sufficient to cause vomiting. In similar cases the gall-bladder and also the falciform ligament become glued by peritonitis to the duodenum and colon, and the colon to the abdominal wall, a channel being formed with the gall-bladder and falciform ligament on either side and the liver and colon above and below, up which the duodenal contents spread round the margin of the liver on to the surface of the right lobe, and form a subphrenic gas-containing abscess.

The friction, which led to the erroneous diagnosis of pleurisy, was really hepatic friction caused by the diaphragm rubbing on the inflamed upper surface of the liver. Hepatic friction may also be heard in the early stage of a perforated gastric ulcer near the pylorus and in some cases of cholecystitis.

INFLUENZA, ACIDOSIS, OR APPENDICITIS?

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In The Lancet of Jan. 21st (p. 141) Dr. H. L. Marriott reports on 47 cases of influenza. Seven of these cases belong to the alimentary type of the disease, which Marriott thinks might well be mistaken for an acute surgical abdominal condition. The definite tenderness in the right iliac fossa naturally suggests the possibility of acute appendicitis. In the January number of the *Practitioner* Dr. A. H. Douthwaite also draws attention to this difficulty in diagnosis, and says: "Probably in no year have the symptoms been so striking as in 1932, when in the early spring numerous abdomens were opened in the faulty diagnosis of appendicitis." He also states that in the absence of a leucocyte count the appendicular form of influenza may ape acute appendicitis so closely as to render accurate diagnosis impossible.

In the following case the differential diagnosis was rendered still more difficult by a complication which can itself simulate acute appendicitis extremely closely.

The patient, a woman aged 24, was admitted to the Aberdeen Royal Infirmary under the charge of Prof. Stanley Davidson on Jan. 11th in diabetic coma. For the three days prior to admission the patient had suffered from malaise, headache, nausea, and vomiting, followed by severe pain in the lower abdomen and the onset of coma. The family doctor suggested that the factor precipitating the coma was acute appendicitis.

State on examination.—The patient was in coma. Pulse-rate, 96. Temperature, 100° F. Urine and breath loaded with acetone. Blood-sugar, 475 mg. per 100 c.cm. Unconsciousness was not complete, since it was still possible to arouse the patient to some slight degree. All the classical signs of diabetic coma were present. Despite her comatose condition, when the appendicular area was palpated the patient immediately groaned and her reflex defence mechanism produced a boarding of the right rectus muscle and a flexion of the thigh on the hip. In addition the cæcum felt distinctly boggy. The white cell count showed that 28,400 leucocytes per c.mm. of blood were present, most of which were neutrophil polymorphs.

There seemed to be three possible causes of the abdominal manifestations:—

(1) *Gastro-intestinal influenza.*—In favour of this view there was (*a*) the fact that an influenzal epidemic was raging in Aberdeen and that a case of influenza was present in the home of the patient; (*b*) the onset and character of the symptoms were suggestive of influenza. Against the diagnosis of influenza was the finding of a marked leucocytosis. It was possible, however, that the leucopenic blood picture of influenza had been masked by the opposing effect of acidosis, which is known to produce an increased leucocyte count in many cases.

(2) *Acute appendicitis.*—In favour of this diagnosis was the marked and extremely localised tenderness and rigidity over the appendicular area, and the high leucocyte count. Against this diagnosis was the absence of symptoms suggestive of previous attacks of appendicitis, and the fact that the abnormal signs cleared up with the acidosis in a few days. The history of the premonitory symptoms was more characteristic of influenza than of acute appendicitis.

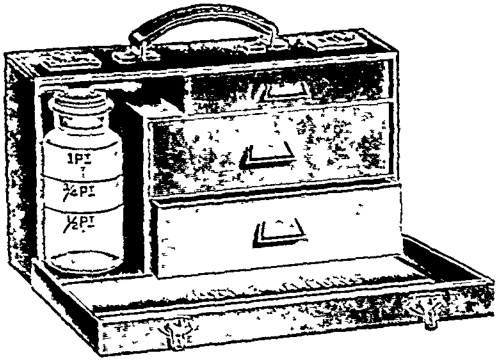
(3) *Acidosis and diabetic coma.*—It is recognised that in severe acidosis abdominal symptoms may be severe and so similar to those of acute appendicitis that laparotomy has not infrequently been performed. Against this diagnosis was the degree of the leucocytosis, the extreme tenderness and definite localisation of the area of rigidity present, and the raised temperature. In conclusion it seemed more probable that a genuine inflammatory condition of the cæcum and appendix was present, but it is impossible to say whether this was appendicitis or a blood-borne inflammation of the bowel as is believed to occur in abdominal influenza.

Surgical measures were not adopted in this case. The usual treatment of diabetic coma was undertaken and the abdominal signs cleared up in a few days.

NEW INVENTIONS

THE PHLEBOTOMIST'S CARRIER

I have devised the handy case illustrated for carrying French's phlebotomy apparatus. The case is stoutly built of fabric and three-ply wood, covered with brown rexine; and the lid when open lies flat, so as to form a tray. The bottle is retained upright by means of a web strap affixed to the back. There are three drawers to carry all accessories. The measurements of the case over all are: 16" by 9" by 4"; and of the drawers the top measures 8¾" by 3" by 1¼", and the middle and lowest 10¼" by 3¼" by 3¼". The carrier is provided with spring locks and key.



Messrs. Allen and Hanburys, Ltd., Bethnal Green, London, E., are the makers.

S. Watson Smith, M.D., Ch.B. Edin.

Glasgow Royal Infirmary: Annual Report.—The recently completed year's working shows that the ordinary income has fallen short of the expenditure by £30,000; in the previous year the deficiency was about £24,000. By using free legacies, however, the accounts have been squared and a small balance carried over to the current year. It is claimed that the reconditioning of the X ray department, now in progress, will make it "in advance of any similar institution in Scotland." Of the 76 probationer nurses who entered for the preliminary State examination all passed but one; in the final there were only three failures out of 66. It is proposed that the bursary of £170 provided by Mrs. Chrystal, of Auchendennan, should this year be given as a travelling scholarship to allow of a trained nurse visiting hospitals in this country, on the continent, or in America. In his speech at the recent annual meeting the Lord Provost urged young women, whatever their position in life, to take a nurse's course "with the object of acquiring a useful training for the ordinary duties of life."

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF TROPICAL DISEASES AND PARASITOLOGY

At a meeting of this section, held on Feb. 2nd, the chair was taken by Dr. H. S. Stannus, the president, and a paper on an examination of

Tropical Neurasthenia

was read by Prof. Millais Culpin. He said that the knowledge of neurasthenia was slight, but the conception of it had recently changed. Its distribution even in this country was capricious and often difficult to explain, and its incidence in the tropics was possibly no greater than in some other places. The word had appeared in the eighteenth century, and had been introduced to describe a condition of nerve-wasting, a conception which had harmonised with the materialistic attitude of the time. In what had been termed the "rubbish-heap" of neurasthenia were included anxiety states and obsessional states. When individual cases of "neurasthenia" were clearly described, in accordance with modern psychopathology, the clinical scope of the diagnosis narrowed almost to vanishing point. Anxiety and obsessional states were based on psychological factors and students should be taught to diagnose them. When they were excluded there remained only a temporary state described by Farquhar Buzzard as "autonomous depression," a condition of fatigue, like that after influenza, which did not respond to psychotherapy but recovered spontaneously. It was rare—not more than 5 per cent. of all cases seeking psychological help. The trouble was a reaction of the man as a whole rather than a physical or biochemical change in nervous tissue. Two opposite ætiologies had been set forth by past writers: hard work and stress by some, and dissipation and sin by others.

The phrase "tropical neurasthenia" suggested a direct physical influence of climate, but the dweller in tropical countries was subjected to very numerous depressing and irritating stimuli. He was never at rest, and always on guard, often anxious about personal safety, health, and finance. Innumerable physical causes had been suggested, but it was impossible for anyone who approached the problem from the psychological aspect to argue with those who insisted on a physical basis. Obviously tropical diseases might have an influence on nervous disorders; any debilitating condition might allow a latent psychoneurosis to become manifest, and bowel troubles might be psychologically determined, as in mucous colitis. Any associated physical condition should be treated, apart from the neurasthenia. It was difficult to estimate the incidence of tropical neurasthenia because the condition was disguised under physical diagnoses such as bowel disorders, "D.A.H.," and malaria. Neurotic patients might unwittingly mimic tropical diseases, and people who had had malaria often described as "malarial rigors" subsequent anxiety attacks. A rise of temperature might even occur in hysterical "rigors."

Prof. Culpin recounted his own experiences in Queensland and Shanghai. In a tropical district of the Australian bush there had been scarcely any illness and no nervous troubles. The people had all done heavy manual work and paid little respect to the hot sun. There was a great psychological difference between taking exercise for the sake of exercise and doing hard work for an end in view. Rigidity of occupational conditions everywhere favoured nervous disorder. For this reason the wife was more liable than the husband; she had to work hard in the same hot ill-ventilated kitchen day after day, while he could change his place of work and was in the open air. The great difference between the Queensland area and Shanghai was that the inhabitants of the former regarded it as their permanent home. In Shanghai there had been a good deal of nervous breakdown, but its incidence had been very small among the lower classes who had settled there. The disorder was very rare indeed on the Anglo-Persian oilfields, and this was explained by the careful intuitive psychological selection of candidates. Another factor in preventing nervous breakdown was satisfaction and a sense of security among employees, and another was a medical staff awake to the psychoneurotic temperament, its early symptoms, and the treatment. Medical students ought to be able to answer the question: "What do you think of that man's psychoneurotic state?" as readily as the question: "What do you make of that man's heart?" The stimulus that produced breakdown might be one or several of very many things, and if it were strong enough almost any man might break. Hard work never caused more than a physiological breakdown from which recovery was swift and sure. There was, however, a pathological urge to overwork, based on obsession, which preceded suicide. People had nervous troubles in the tropics just as elsewhere, and there was no justification for assuming any form of neurasthenia peculiar to the tropics. When the trouble arose it should be treated in the same way as a minor psychosis anywhere else.

INVALIDING FOR NERVOUS CAUSES

Dr. H. C. Squires interpreted "tropical neurasthenia" as all those disabilities of Europeans in the tropics, other than the psychoses, which came within the scope of psychological medicine. They caused an immense amount of invaliding, and yet the medical officer received little or no training in their diagnosis and treatment. The most striking feature of such statistics as were available was the high percentage of invaliding for psychological reasons after less than four years' service. The chief ætiological factor was the action of stresses on people of a certain constitution, rather than the effect of abnormal stresses on ordinary people. The emotional factors were more important than the physical agencies such as light, heat, and dust. Those who found acclimatisation difficult usually manifested indications of the neurotic constitution. Sex influenced a man according to his life style. With a man for whom virility was the essential symbol of manhood, tropical conditions might raise unbearable conflict, which might be mitigated by liaisons with native women or by neurosis. Sexual intercourse might be the symbol of masculinity, and the assertion of his power and authority to a man living in a primitive and warlike community.

Dr. Murdo Mackenzie described some cases in which tropical life had precipitated a neurotic state somewhere between the major and minor psychosis. In each of them there was a difficult psychological situation which had not essentially anything to do with the tropics. The only really typical case of neurasthenia he had seen had subsequently manifested tabetic signs! Neurasthenic symptoms might also appear in retarded cases of schizophrenia.

Dr. P. H. MANSON-BAHR said that the London School of Tropical Medicine would soon become a school for the study of neurosis in the tropics. Tropical diseases were playing a very small part in invaliding now: 1 per cent. as opposed to 30 per cent. of psychological disorders. The psychotherapist ought to play a very important part in the examination of candidates. A rugger blue, apparently an ideal empire-builder, might come back in three or four years psychoneurotic. Moreover, the problem arose whether such a case should ever go back. The monotony of tropical life was an ætiological factor worthy of consideration. Patients started with insomnia, and then began to imagine things.

Sir MALCOLM WATSON spoke of 28 years in the Malay Peninsula with a day temperature of 90°, a night humidity of 95–100°, cicadas, bull-frogs, and termites, as well as the social habit of taking alcohol. Malaria had at first been so bad that white women could not live there; 90 per cent. of the men had lived with native women, but this had not affected them in any way. Later, the country had been almost freed from tropical disease, but cases of unfitness for the duties of life had become a problem. There was a certain cure: to send the victim to a hill station regularly for two or three weeks every year. There had been a great increase of neurasthenia during the war when leave was scanty. Eight hours sleep and sweating from active exercise were essential. He agreed that hard work did no harm. Since the war alcoholism and living with native women had much decreased but neurasthenia had increased.

Dr. R. A. O'BRIEN said that neurasthenia was no more a tropical disease than pneumonia, but it caused a grave amount of permanent invaliding. In 1930 the West African service had lost 49 people, 11 for neurasthenia or psychasthenia. In 1931 there had been 13 neurasthenics and 4 alcoholics out of 48 invalided. In the Dutch West Indies the figure for "neuroses" had been between 40 and 59 per cent. of those sent home invalided. A European degenerated physically in the tropics, and probably also mentally. He met more obnoxious stimuli in the tropics than at home and so was far more liable to neurasthenia.

Dr. R. TRAVERS SMITH thought that the astonishing thing was that so few people broke down. Everybody going to the tropics was potentially nervous, and in the tropics they met stimuli likely to break them down. The greatest sufferers were brides, who failed to adapt themselves to married life, cut off from home and friends. Children born in the tropics were over-terrified by their parents of the sexual aggression of the natives. Separation from the mother—the mother-country—had a profound psychological effect. The sun also had profound psychological significance. The heat stimulated sexuality, causing severe conflict. Social conditions promoted alcoholism, which reduced ego-control. Tropical neurasthenia, however, differed in no way from home neurasthenia. Psychoneurosis developed at home might be cured by residence in the tropics.

Dr. DAVID FORSYTH welcomed the spread of psychology into all branches of medicine. He supported Prof. Culpin's views, especially as to the rarity of "true" neurasthenia. Men invalided home were obviously of neurotic constitution, and one motive in selecting foreign service was to escape from the difficulties of life at home. Some had failed to get on at home because of a negative, quarrelsome attitude; others suffered from inferiority and thought life would be easier among an inferior race; while others had suffered from morbid shyness, particularly in the presence of women, and had escaped from this by going abroad. Psychological investigation of candidates would detect these types.

Dr. W. E. COOKE supported Dr. Manson-Bahr's plea for help in assessing the fitness of candidates. Bowel diseases had an enormous effect on the mind; some people "lived in their bowels." The prevalence of helminth diseases and their effect on the mind required a good deal of study before all these conditions were classed as mental.

The PRESIDENT emphasised the necessity of knowing some psychology, and the importance of agreeing with the companies concerned what kind of examination should be made. One of the most calamitous cases he had ever seen had been a rugger blue. None of the "old stagers" had had neurasthenia, though they had often drunk freely. People who had any interest in their bowels were a priori neurasthenic.

Prof. MILLAIS CULPIN replied. He said he did not believe that white men degenerated in the tropics.

SECTION OF LARYNGOLOGY

A MEETING of this section was held on Feb. 3rd, Mr. MUSGRAVE WOODMAN (Birmingham) presiding. Mr. G. GORDON-TAYLOR introduced a discussion on

Malignant Disease of the Oropharynx

He said that the extirpation of primary malignant growths of the oropharynx and fauces practically never now involved the use of the old-fashioned knife, the modes of surgical attack being almost limited to diathermy or one of the various forms of radiation. In this respect the surgery of those parts corresponded with the surgery of the buccal cavity; the knife was only required for the subsequent fashioning of flaps to fill the gap produced by the operation. Though diathermy was at one time disparaged surgeons seemed to be now agreed that diathermy was one of the methods of election for carcinoma of the oropharynx. The endothermy knife was now often used for this purpose. Most surgeons preferred the ordinary knife for removing infected tissues and lymphatic glands in the neck, and he was not convinced that the late results of block dissections were improved by using the endothermy knife, or by the subsequent use of Columbia paste. Where the primary growth was infiltrating, or the lymphatic glands of the neck were involved, the patient was subjected to preliminary dissection of the neck, and the external carotid artery was tied. Mr. Gordon-Taylor had only twice seen severe secondary hæmorrhage following diathermy excision of carcinoma of the tongue; it was easily controlled. He had had one fatal case from severe hæmorrhage following diathermy for malignant disease of the tonsil; in that case the external carotid had not been tied. In the more advanced type of case it might be necessary to gain access to the tumour either by splitting the cheek, or by removing the alveolar or the upper border of the jaw.

When access was insufficient without splitting the cheek, the removal of half the mandible back to the condyle of the jaw gave good access to the base of the tongue in the neighbourhood of the tonsil. In carcinoma of the hypopharynx he tried to preserve the sternomastoid muscle, and in oropharynx cases he was sometimes able to preserve it. Occasionally, by turning the posterior belly of the digastric muscle over the facial artery, putting in a rubber dam and stitching it in place over the tonsils he provided a good landmark for the second operation and lessened the chance of infection. He admired Mr. Wilfred Trotter's operations on the pharynx, but had never managed to secure adequate access to the area around the base of the tongue either with superior lateral pharyngotomy or through transmedian lingual pharyngotomy. He preferred to gain access by removing half the jaw and the canine fossa condyle.

For malignant growths of fauces Mr. Gordon-Taylor carried out diathermy excision, or coagulation, or a combination of these. For larger growths he did the double operation: block dissection of neck, followed by diathermy of the primary growth. For still more extensive growths he did dissection with ligature of the external carotid, obtaining access to the primary growth by removing a portion of the cheek or resection of half the mandible. In the presence of doubtful growths at the base of the tongue it was important to do a biopsy. In the decision whether to deal with a particular growth by ordinary surgery or by radium the sex, the social environment, and the physical conformation of the patient must be considered. A large body of statistics showed that three out of every four tumours had been relatively sterilised by radiation treatment. In carcinoma of the tongue Mr. Gordon-Taylor held that diathermy excision was the best of all treatments.

Mr. **Norman Patterson** said that carcinoma in this locality was comparatively rare; of 500 cases of cancer dealt with by Sir James Paget, 2 were in the tonsil, 9 in the gums and palate, and 30 in the tongue. Only in the early stages of a case could the exact site of origin be determined; a growth originating in the tonsil might later show the main mass in the tongue. In every case a thorough examination should be made of nasopharynx, hypopharynx, and larynx both by mirror and palpation. A growth too small to be visible might be detected by palpation. Sometimes tonsillectomy was valuable as a diagnostic measure. It was a serious error to mistake cancer for syphilis; on the other hand, he had rarely seen syphilis diagnosed as cancer. The average age of patients in his series of fifty cases was 58 (the oldest 80, the youngest 38). Forty-eight were males and two females, and neither of the latter had carcinoma of tonsil or pharyngeal portion of the tongue. Preliminary removal of tissue for microscopical examination was, he thought, rarely needed; but if it should be, the endothermy knife should be used for the purpose. The outlook in these cases had much improved since the introduction of excision of the primary growth by diathermy combined with a bold attack on the cervical lymphatic glands. But his results after the use of radium had been disappointing. In some cases a combination of diathermy, surgery, and radiation was best. Sometimes, owing to the size of the growth, it was necessary to do a bilateral operation on the neck. After removing the tumour, the cavity should be treated with the button electrode.

Treatment of the gland-bearing areas presented a bigger problem than treatment of the tumour itself. Enlarged glands were sometimes found, on removal, to be non-malignant, but a negative report on tissue removed from the neck was not always conclusive, and glandular metastasis might appear years after the primary tumour was removed. For a growth of the oropharynx he always took away the sternomastoid muscle. Unless there was reasonable hope of lasting good from extirpation, it was not desirable to carry out block resection. He ligatured the external carotid at the time of the operation, and when the growth was large it might be well to also ligature the fellow carotid.

Prof. **L. van den Wildenberg** (Antwerp) spoke of the treatment of tumours of the tonsil and at the base of the tongue. The varieties he had met with in this region were lymphosarcoma and epithelioma. He treated the first of these with X rays, the routine dose being 180 kv. at a distance of 40 cm., with a filtration of 1 mm. of copper, using large fields. The tumour disappeared rapidly and it was rare to see local recurrence. On the other hand, distant metastasis was common, and the duration of life depended on the number of secondary deposits and their situation. A good but more expensive method of treatment was by means of moulded wax with contained radium. In these circumstances the dose was 1 millicurie per sq. cm. at a distance of 3–4 cm., with a filtration of 1 mm. of platinum. Both sides were treated, and a dosage of 100 to 150 mg. was spread over about a week. Some of his patients had survived eight years. He considered it advisable to treat neighbouring gland-bearing areas, even if the glands showed no sign of involvement. For epithelioma he used either the routine X ray treatment or the surface application of radium if the growth was such that only palliative results were to be hoped for. He did not advise the use of radium needles here, since it was difficult to keep them in position. He inclined most to telecurietherapy. Usually the growth disappeared locally, but there might be local recurrence. At present he was combining medical with surgical treatment.

DISCUSSION

Mr. **Wilfred Trotter** agreed with Mr. Gordon-Taylor's dictum that in early cases, where the growth was superficial, it was unnecessary to insist on immediate gland resection. When a point had been reached in the treatment of a particularly deadly kind of cancer at which experience showed the patient could be spared some of the suffering involved in dealing with it, that opportunity should be grasped. He disagreed with Mr. Gordon-Taylor's remarks about the median pharyngotomy; he had used it with advantage in cases of comparatively early tumours close to the middle line, for he found it was the only operation for the radical cure of growths fairly far down the pharynx, and it did not cause bleeding.

Mr. **Douglas Harmer** said he had been carefully following radiological methods for 20 years, but various ways of treating cancer should not be pitted one against another, since all had their special uses in appropriate cases. Taking that view, the question was one of selection. Here biopsy was very important, but it should not be done if a clinical diagnosis could be made with certainty, for fear lest it might spread cancer cells. Such dissemination could be effected even by massage, or by considerable handling. With rapidly growing sarcomata, epitheliomata, and transition-cell carcinomata there were grave risks from surgical, and even diathermy treatment, but they responded miraculously to irradiation. With early growths surgery gave good results, and he advised surgeons to stick to their surgery unless they had worked for a long time at radiology. Growths of the oropharynx were too deeply situated for complete disappearance of the growth to be expected from purely superficial irradiation. Present radiation bombs were not large enough to get results at such a distance without serious damage to the skin. The best way was to give some surface X radiation, and supplement it by interstitial application.

Mr. W. S. DICKIE (Middlesbrough) said he regarded the tonsil as, to a large extent, immune from cancer; cases so-called of tonsillar carcinoma originated, he contended, in the anterior pillar of the fauces. These cases were becoming commoner, those of the lip less so. Cancer of the anterior pillar of the fauces did not readily infect the lymphatic glands; it was, he considered, a local disease. He dealt with it by block dissection of part of the neck, division in the midline, resection of the jaw to the canine fossa, and excision of the growth.

Mr. W. L. WATT suggested that in so-called borderline cases (late operable, early non-operable) a full course of deep X ray therapy should be given. He thought it possible that a combination of three methods might give improved results in severe cases.

Dr. DAN MCKENZIE gave the results obtained in 11 cases of removal of cancer in this region by diathermy excision. Six recurred: 2 soon after operation, 2 in a year, 1 in 3 years, 1 in 5 years. Two were now alive after 4 years, 1 after 6 years, 1 died of morbus cordis after 12 years. Removal of the sternomastoid facilitated dissection and removal of glands, and he always tied the external carotid.

Dr. T. B. JOBSON spoke of some cases of carcinoma in this region which he had treated. Most of them were squamous-celled. All but one were operated upon by diathermy, and some had X ray treatment secondarily. The results as a rule were discouraging; many cases were far advanced before the surgeon saw them.

Mr. GORDON-TAYLOR, in reply, agreed about the risks of dissemination through biopsy; if biopsy was necessary it should be done with the endothermy knife.—Mr. NORMAN PATTERSON took the same view.

SECTION OF OTOLOGY

AT the meeting of this section on Feb. 3rd, with Mr. J. F. O'MALLEY, the president, in the chair, the discussion on

Should Acute Mastoiditis be Operated upon Early or Late?

was opened by Dr. DOUGLAS GUTHRIE (Edinburgh). The decision, he said, was not always easy. The question really was how early could one operate, rather than how long could one wait. "Early" he took to mean operation during the first week of the otitis, and "late," operation after the fourth week. "Early" did not mean immediate. In the last decade there had been a growing tendency to operate early, and it had been suggested that in acute suppurative otitis the mastoid process should be opened for drainage, even when the usual signs of mastoiditis were absent. The time had now arrived to determine whether the pendulum had swung too far in favour of early operation. It might be that the risks in operating too early were equal to those of operating too late. The indications for operation were not always definite; cases of acute suppurative otitis were met with in which there was only slight mastoid tenderness, and yet the antrum and numerous air-cells were filled with pus. Hence the clinical symptoms bore no dependable relation to the pathology of the mastoiditis, and so the decision on the case became a matter of personal opinion. Signs of meningeal or labyrinthine implication constituted a definite call to operate, and so did a profuse discharge of pus which reappeared after some had been mopped away. Temperature and pulse-rate were not a constant guide, indeed in many cases the temperature remained normal. A high leucocyte count denoted a severe infection, but few otologists would decide to operate from the blood picture, and very few as a result of X ray examination. The chief sign was the presence of mastoid pain and tenderness or œdema. The two former were significant according to the period which had elapsed since the onset of the otitis. Alexander spoke of a prior and less severe condition which he called "mastoidism," and said operation was not necessary until mastoiditis could be diagnosed.

How long should the otologist wait after the establishment of a free meatal discharge? The longer a case went on, the greater became the importance of the symptoms. Some argued that, as in the case of appendicitis, mastoiditis should be operated upon at sight, but Dr. Guthrie claimed that the two situations were not analogous, and in some cases of mastoiditis a spread of the infection might be favoured by dealing too soon with the local focus. Neumann, as a result of an analysis and study of 1300 cases, stated that the second and third weeks after the onset of symptoms were the best time for operation, and in the cases operated upon in the first week there was a mortality of 8 per cent., and a complication rate of 25 per cent. There were no deaths or complications in the cases operated upon in the second and third weeks.

Cases could be divided, he said, into three classes—the average, the mild, and the severe case. In the first class, early operation could be said to be sound in practice, and the results were good; the safest period for these seemed to be during the second or third week. In the second class there was always the possibility of recovery without operation; early mastoid symptoms did not necessarily demand immediate operation. In the acutely fulminating case operation in the first week was not so safe as some considered; dealing with it at this stage might result in a general septicæmia, and longer delay seemed to be justified by experience.

Mr. C. A. SCOTT RIDOUT (Portsmouth) held that there was a closer analogy than Dr. Guthrie conceded between mastoiditis and acute appendicitis; it could be placed in the same category of urgency as any other form of osteomyelitis. For 15 years his practice when recognising acute mastoiditis had been to at once open and drain. The text-book signs were well known, and in addition he paid particular attention to the toxic appearance of the patient, with an increasing pulse-rate, mastoid tenderness, a swollen and bulging tympanum, either with or without discharge, and sagging of the posterior meatal wall. Sometimes cases presented themselves in which the problem was to determine whether the condition was acute mastoiditis or acute furunculosis with œdema. In 24 years he had operated upon 196 cases, and four patients died, one of these not having been seen until the eleventh day. It was his firm view that lateral sinus thrombosis and meningitis were more likely to ensue if operation was delayed. By early operation and sewing up the greater part of the wound he expected complete healing with preservation of hearing. In only one case had he regretted operating early.

DISCUSSION

Dr. DAN MCKENZIE said his leanings were towards early operation in these cases, but one must be governed by what seemed best for the particular patient. It was suggested by some that in the fulminating case it was advisable to wait a few days before operating, so as to allow of the fixation of the abscess, and thus lessen the risk of general septic dissemination. Referring to the statistics of Neumann, which Dr. Guthrie quoted, he said that whenever one set out to seek justification for any particular policy one was able to find some comfortably supporting statistics. His criticism of these figures of Neumann's was that it was not stated whether the operations were done because a definite complication was present, or done simply in carrying out the principle of early operation. Without this essential information the figures were useless as a guide. There was danger in this region that pus might go inwards to the brain as well as outward. Of his last 100 cases 6 died of meningitis. He advocated early operation and drainage in the fulminating cases.

Dr. H. M. Hendershott (Oregon, U.S.A.) thought that the blood picture gave a valuable indication as to the time to operate—i.e., as to whether or not the blood was putting up a good fight against the disease. If not, operation was called for.

Mr. Eric Watson-Williams said that in cases where the decision had been reached that an operation would be required—for some cases got well without operation—he believed in doing it at once. Even by waiting a week one was unnecessarily exposing a patient to risks. Many fulminating cases of septicæmia were fatal, whatever was done for them. The preservation of the hearing was very important to aim at.

Mr. T. B. Layton agreed that treatment of osteomyelitis afforded the best basic treatment for these cases of mastoiditis. In invasive mastoiditis there was a danger of septicæmia and great risk of spread to the brain. He attributed the greatest importance in diagnosis to the general appearance of the patient. For years Mr. W. M. Mollison had been teaching that deafness was a sign of mastoiditis; and for a long time he did not agree, until a tragic case convinced him that Mr. Mollison was right.

Mr. E. Cowper Tamplin wished more stress were laid on the need for carefully watching the patients. This advice from experts would be valuable to general practitioners, who usually saw cases first.

Sir James Dundas-Grant laid emphasis on the importance of tenderness as a sign to be assessed with other signs and symptoms, especially a sense of throbbing in the area. Cases differed greatly in the guise in which they were presented, and peculiarities of anatomical conformation must not be left out of account.

Mr. W. Stuart-Low professed himself, after 50 years of practice in this field, strongly in favour of early operation for mastoiditis. He agreed as to the importance of a throbbing, and if in such a case pus returned after its aspiration he did not hesitate about operating.

Dr. R. Scott Stevenson said it was a mistake to think every case of mastoiditis must be operated upon, and the statistics of the Mayo Clinic showed that the results had been better since operation had been delayed for a time. Only 28 cases out of 1302 were operated upon in the first week. In 16 of the 28 cases there were early complications.

Mr. W. S. Adams (Birmingham) said his experience with fulminating cases had been disastrous, since of six such cases four died. Of 100 cases of mastoiditis in his experience of 18 months he did no more than paracentesis in 41, and in the remaining 59 he operated on the mastoid. One of them was lost through fulminating otitis, followed on the second day by lateral sinus thrombosis, death taking place on the fourth day.

Mr. L. Graham Brown said he considered there was a period in these cases when one could hope for natural drainage from the mastoid antrum and cells. Even in so-called influenzal epidemics he had seen these cases clear up if operation was delayed. When empyema occurred it was an indication of the need of something further. But how was one to recognise empyema in the mastoid bone? Only by the clinical, and especially the physical, signs. Many cases were seen in which it seemed appropriate to operate, but the disease was limited to the muco-periosteum, and they cleared up without calling for operation.

Mr. J. A. Gibb said there was no need to hurry about operation in the first 24 to 48 hours, but to wait for a week or more was to ask for trouble. Mastoid disease in the child was a different condition from that in the adult.

Mr. Somerville Hastings thought it had not been sufficiently emphasised that mastoid disease was not, per se, lethal. He had seen cases having definite pain and tenderness on pressure recover. The chief question was whether there were liable to be complications; if so, operation must be carried out.

Dr. Guthrie, in reply, said he took the view opposite to that decided upon by Mr. Ridout in order to induce a thorough discussion; yet he largely shared Mr. Ridout's view, though he still held that cases did occur in which it was as well to delay operation for a time, while carefully watching the patient.

Mr. Ridout said he was still an unrepentant advocate of operation within a few hours of mastoiditis being diagnosed. Admittedly if the case was not too acute, a night spent in hospital might be to the good; but delay he did not believe in.

ASSOCIATION OF CLINICAL PATHOLOGISTS

The sixth annual meeting was held on Jan. 28th in the pathological department of St. Bartholomew's Hospital. Prof. E. H. Kettle opened the meeting, and in the absence of the president, Dr. G. W. Goodhart, the chair was afterwards taken by Dr. J. G. Greenfield, vice-president of the association.

Dr. D. Embleton (London) contributed some observations on obesity in men and women. In endeavouring to reduce overweight of individuals Dr. Embleton had found a great difference in the behaviour of the two sexes. A fairly high proportion of overweight males showed sugar in the urine, and on examination of the glucose-tolerance curve gave a rise of the blood-sugar above what is usually regarded as the normal level; in certain cases the curve assumed the plateau form usually regarded as of prediabetic form. The male patients responded well to treatment with a balanced diet fairly rich in carbohydrate and slightly below their metabolic requirements. Sugar and pastry were omitted from the diet, and the carbohydrate taken in the form of fruits, vegetables, and bread. The caloric value might be from 1500 to 2000, according to the work and weight of the patient. Dr. Embleton laid great stress on the importance of absolute prohibition of alcohol in any form. Women, however, seldom gave any abnormality of the glucose-tolerance curve, and in them glycosuria in the absence of frank diabetes was a rarity. It was difficult to bring down the weight of female patients, and their weight tended to become stationary before the standard weight for the height and age had been reached in spite of drastic reduction of the diet. In certain cases the metabolic rate was below normal, and in these thyroid was of assistance.

Dr. Cuthbert Dukes (London) recorded observations on the glucose tolerance in cases of rheumatism and pruritus. In a small proportion of cases of rheumatism he had found abnormalities of carbohydrate metabolism; in one case rheumatic symptoms had developed after prolonged over-indulgence in sweetmeats and had persisted, and here the glucose-tolerance curve approached the plateau type of diabetes. Some benefit had been brought about by regulation of the diet. He did not think it necessary to plot the glucose-tolerance curve in every case of rheumatism; a test dose of glucose followed by examination of the urine would reveal whether further investigation was necessary. In cases of pruritus other than those of diabetic origin, Dr. Dukes found no disturbance of the glucose metabolism.

Dr. A. Renshaw (Manchester), Mr. F. Twyman, and Mr. D. H. Follett (London) demonstrated an apparatus, tentatively named the hemovisor, for the quantitative examination of the blood and of suspensions of precipitates by optical methods. On the same specimen the mean diameter of the red cells was shown by the halometric method of A. Pijper; the enumeration of these cells was brought about by the passage through the suspension of a beam of light which afterwards fell upon a light sensitive cell, the number of red cells per c.cm. being indicated upon a calibrated scale by the beam from a galvanometer. The instrument was also adapted to give a numerical expression to the density of precipitates such as those formed in the Kahn test and of other suspensions such as bacterial emulsions. The apparatus is being constructed by Messrs. Adam Hilger and Co.

Dr. J. G. Greenfield and Dr. Elizabeth O'Flynn (London), investigating pituitary tumours, had been unable to demonstrate any constant abnormality in the glucose-tolerance curve for any particular type of tumour. They suggested that glycosuria in such cases might be brought about in some instances by the antagonistic action of pituitrin on insulin, and in others by a disturbance of renal function inducing failure of reabsorption of the sugar in the glomerular filtrate.

The same workers recorded observations on the leucocyte count after irradiation of the thymus. Contrary to expectations irradiation resulted in no drop in the relative or total lymphocytic count. Dr. Greenfield also showed highly decalcified bones from two cases of toxic adenoma of the thyroid.

Dr. Eric Wordley (Plymouth) demonstrated the most recent method of Kay for the estimation of the blood phosphatase and referred briefly to its importance in clinical medicine. He emphasised the fact that the blood phosphatase is greatly raised in osteitis fibrosa of the generalised type, only moderately so in osteitis deformans, and not at all in osteitis of the focal type.

Dr. D. S. Murray (London), in the absence of Dr. Goodhart, demonstrated an adenoma of the pancreas which had given rise to hypoglycæmia. The patient, a female of middle age, was admitted to the Archway Hospital, Highgate, suffering from recurrent attacks of coma. During these attacks the blood-sugar was found to be very low, on one occasion reaching 0·02 per cent. An adenoma of the pancreas was diagnosed but the patient refused to submit to operation and discharged herself. She was later admitted suffering from broncho-pneumonia, from which she died; an adenoma of islet tissue was found in the pancreas at post-mortem. The tumour was embedded deeply in the pancreas, and surgical removal would have entailed great difficulty.—Dr. W. W. Mackarell (Leicester) described a similar case in which the pedunculated tumour would not have been difficult to remove.

Dr. S. C. Dyke (Wolverhampton) demonstrated a tumour of the parathyroid which had given rise to general osteitis fibrosa. The patient, a girl aged 13, was admitted to the Royal Hospital, Wolverhampton, in 1930, suffering from pain and shortening of the left leg. Radiograms showed rarefaction of the bones of the left hip; the blood calcium was found to be over 17 mg. per cent., and the urinary excretion of calcium increased. A tentative diagnosis of parathyroid tumour was made but operation was not performed until two years later. Calcium balance investigations showed a calcium retention; an adenoma of the parathyroid was removed at operation, whereupon the blood calcium dropped, the calcium balance became positive, and symptoms disappeared.

Dr. Dyke also demonstrated, for Mr. R. L. Dutton (Wolverhampton), an apparatus for the clinical estimation of the cholesterol content of the blood. The method required only 0·25 c.cm. of blood; this was taken up on absorbent paper and extracted with chloroform in a special apparatus; the estimation was made colorimetrically, using the acetic-anhydride-sulphuric acid colour reaction.

Dr. R. Klaber (London) showed an extensive series of microscopical preparations of fungal infections of the skin, with cultures of the different species. He pointed out that the so-called "common ringworm," the microsporon audouini, is not nearly so common as it once was; the "black-dot" ringworm, once rare, is occurring more frequently. Dr. Klaber said that this type of ringworm was difficult to diagnose; infected hairs were best secured by lifting them out with the overlying scurfy skin.

Mr. H. E. Kendrick (London) demonstrated apparatus for hospital use, and also of portable type, for the estimation of the basal metabolic rate, and also various types of apparatus for the chemical examination of the blood.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION

A meeting of this association was held on Jan. 25th, with Prof. M. Lucas Keene in the chair. Dame Louise McIlroy spoke on

Things that Matter in Midwifery

As to diagnosis in the early stages, she said, Aschheim-Zondek tests, and after the twentieth week X rays, were useful. At the twentieth week the X rays just showed a row of dots which indicated the line of the fœtal vertebral column and a radiogram near term would show whether the head was in the centre, when it would usually give little trouble, over the pelvic cavity, or to one side. X rays might also give valuable information where death of the fœtus was suspected, showing sometimes only a mottled mass in the pelvis which made it quite clear that the fœtus had died some time previously. In these cases, Prof. McIlroy said, it was her practice to leave the patient alone until abortion occurred spontaneously, or until some indication for interference arose.

When examining a pregnant woman it was customary to begin at the fundus, holding the hands in a cup-shaped position; if there was tenderness at the fundus, breech presentation should be suspected, the tenderness being probably due to intermittent pressure of the head on the uterine wall. An occipito-posterior presentation might sometimes be diagnosed by the fact that when the back was on the right the shoulder could not be felt. This fœtal position was suggested also by failure of the head to descend after the thirty-sixth week in a primigravida, in whom the head ought to fix from the thirty-sixth week onwards. Miss J. Partridge had devised a method of estimating the mobility of the pubic arch, the examiner placed a finger under the pubic arch of a standing patient who raised her legs alternately, and estimated the degree of movement of the pelvic arch. Flat pelvis was not often seen; when the promontory of the sacrum could not be felt the diagonal conjugate was immaterial, since the pelvis could not possibly be flat. The fœtal head was the best pelvimeter; Monro-Kerr's method of pushing the head into the pelvis after the thirty-fourth week would show whether there was disproportion. Another method, preferred by patients, was to push the head down into the pelvis with the patient lying on her back, and to observe the ridge formed above the pubis. X rays were not of much value in assessing degree of disproportion, but would show whether the head was central and well flexed, and whether it had entered the pelvis. Placenta prævia should be suspected when a souffle was heard at *one* side of the abdomen on auscultation, except when the placenta was posterior, but this was uncommon.

If disproportion was slight, the practice at the Royal Free Hospital was either to induce labour with drugs, or to let the case go to term. Induction was never performed before the thirty-eighth week. If the head could not be pushed into the pelvis, induction was not performed, but a trial labour was allowed; in many cases normal delivery resulted. If drugs were used for induction and vaginal examinations avoided, Cæsarean section could always be performed if necessary; but if bougies were used, delivery had to be completed by the vaginal route. Most breeches turned themselves if left alone. Version should not be attempted until the thirty-sixth week. If the fœtus turned easily it would probably have turned without assistance; if not force must not be used since the legs were probably extended. To turn a breech which had descended deeply into the pelvis, the patient should be placed in the Trendelenburg position; the examiner should never try to push up the breech from below. A transverse presentation was usually a breech in the act of turning, and was seldom persistent. Where the pelvis was asymmetrical—as a result of hip disease, for example—a trial labour should be allowed; the head might enter the pelvis in the wide diameter, and all would be well; if not, Cæsarean section could be performed. Small fibroids seldom gave rise to trouble at labour, but larger fibroids might degenerate and require enucleation; permission should always be obtained to perform hysterectomy if necessary. It was surprising how many low fibroids would get drawn up out of the way before labour, but if a fibroid was impacted in the pelvis Cæsarean section should be performed at term and the tumour enucleated. Out of a series of 182 cases of Cæsarean section, Dame Louise said, she had only performed the operation once in a case of eclampsia. She treated mild cases of eclampsia with rest, fluids, and a carbohydrate diet; the bowels were kept well open and a mixture containing sodium calcium lactate, sodium bicarbonate, and potassium citrate was given; vitamins in the form of marmite and adexolin were added to the diet. In severe cases colonic lavage was also carried out and rest in bed enforced. In cases of post-partum hæmorrhage, the usual emergency measure was to place a fist in the anterior fornix of the vagina, and to press the uterus down against it by means of the other hand on the abdomen; it was much better to pull the uterus upwards, thus putting the vessels on the stretch, and diminishing the blood-supply. In hospital it was customary to use an intra-uterine injection of warm glycerin. Dame Louise showed a film of normal labour, taken by herself and a colleague.

Exercises Before and After Delivery

Miss M. RANDELL, with the assistance of a member of her staff at St. Thomas's, and one of her students, gave a demonstration of exercises for the pregnant and post-parturient woman, devised by her many years ago in association with Dr. J. S. Fairbairn. In planning the exercises attention had been paid to the circulation—general, abdominal, and pelvic. Other exercises were meant to stimulate lactation and to develop musculature, so that the convalescent patient would not be exhausted by standing and walking.

ROYAL ACADEMY OF MEDICINE IN IRELAND

AT a meeting of the section of pathology on Jan. 6th Dr. J. LAIT showed a specimen of

Double Tumour of the Breast

The patient, a married woman aged 54, with two children, first noticed in June, 1932, a small swelling over the manubrium sterni.

About this time she complained of some pain above the left collar-bone. The swelling increased in size, and she was admitted to hospital in September, 1932. There was a red, tender swelling the size of a walnut fixed to the anterior surface of the sternum. A small firm nodule was noticed in the left breast, and some small firm glands in the left axilla. Radiography of the sternum suggested that there might be an abscess in the bone. An incision was made and a solid tumour was found growing from the sternum. It was decided to remove the breast and clear out the axilla; at the same time as much as possible of the sternal tumour was removed. There was aseptic healing, and X ray treatment was applied to the sternum. The patient returned home in November, and was now well and had no pain, but reported that there was some increase in the thickening over the sternum.

On histological examination, Dr. Lait said, there was found: (1) tuberculosis affecting a gland in the axilla; (2) endothelioma of lymph tissue on the surface of the sternum, in the gland, and in the breast; and (3) early scirrhous cancer of the breast, with the development of one or two secondary foci in the same gland. When the section was cut two appearances were visible, one an obvious scirrhous carcinoma, and the other a rosette arrangement of cells. It was possible for endothelioma to simulate carcinoma very closely. The case was one of early scirrhous cancer of the breast and, in addition, early endothelioma of the breast.

REVIEWS AND NOTICES OF BOOKS

The Principles and Practice of Rectal Surgery

By WILLIAM B. GABRIEL, M.S., F.R.C.S., Surgeon to St. Mark's Hospital and to the Royal Northern Hospital. London: H. K. Lewis and Co., Ltd. 1932. Pp. 248. 20s.

THIS manual of rectal surgery is welcome. It is of just the right size; not too large to be read, and yet not too small to supply an adequate account of its subject. Mr. Gabriel has done well to dispense with those long anatomical descriptions which fill the opening chapter of so many books of this kind. Indeed he is in some places almost too economical of words—as, for example, where he describes the treatment of fistula in two stages (p. 93). The necessity for leaving the sphincteric part of the fistula to a second operation will not be admitted by some older surgeons, and it would be interesting to know on what grounds this explicit recommendation is made. The treatment of fistula is always a lengthy process, and to divide it into two stages with an interval of "a few weeks" is an innovation which will not be lightly accepted by the patient. The account of tuberculous fistula is excellent, though the statement that "If a fistula of this type occurs in an adult between 18 and 30, its tuberculous nature is certain, *especially if the occupation of the patient is that of a clerk*," is too dogmatic in the passage we have italicised.

Nearly every chapter is of interest, and those on the treatment of procidentia in adults and on fissure are notable. The alcohol injection method for prolapse in children is not apparently used by Mr. Gabriel. His operative procedure for fissure will be thought too extensive by some surgeons, especially as, since we are told, the external wound sometimes splits open on exertion a few weeks after it has healed. This is not surprising as, judging by diagrams, a triangle of skin with a base approximately 2 in. wide is removed from behind the anus. The chapter on carcinoma recti reveals the fact that Mr. Gabriel prefers when possible to do a perineal excision, and for higher growths has found perineo-abdominal much superior to abdomino-perineal excision. There is a slip in diction on p. 188 where it is written of the perineal dissection that "great care must be exercised not to extend the dissection anterior to the prostate"; presumably this means that the prostate should not be encroached upon. Mr. Gabriel mentions but does not recommend conservative resection of the rectum; yet there are patients who would prefer the greater risk of recurrence if they could escape a colostomy, and Prof. Grey Turner's results show, as do those of some continental surgeons, that some patients survive for many years.

This is an attractive book, well printed and illustrated. It fills a definite gap in English surgical literature, and we are grateful to the author for having written it.

Functional Disturbances of the Heart

By HARLOW BROOKS, M.D., Attending Physician, Bellevue Hospital, New York. London: J. B. Lippincott Company. 1932. Pp. 288. 21s.

THE practitioner probably sees 20 cases of functional disturbances of the heart to every one case of true heart disease. He will find in this book pronouncements which bear the stamp of wide experience and understanding, especially in connexion with the relation of disturbances of the cardiovascular system to the nervous system and the endocrines. Though they do not endanger life, functional conditions often entail far more mental and physical suffering than do any forms of organic disease, with the exception of angina pectoris; and because of the annoying character of the symptoms they cause constant uneasiness if not alarm. A large section of this book is devoted to a detailed consideration of the condition described as neurocirculatory asthenia. In his account Dr. Brooks draws largely on his war experiences, which has enabled him to understand and assess the importance of this condition to society and to the individual. He shows in a preliminary historical survey that references are to be found to its incidence during the Civil War in America. An illuminating section deals with cardiac neuroses, notably the psychological aspect. Some statements, however, will certainly meet with criticism. For example, Dr. Brooks observes in his opening paragraph on pain in the præcordium that "it is the present tendency of physicians to consider most of these cases of unaccounted precordial pain as tentative instances of angina pectoris"; this is surely too sweeping. The views here expressed on cardiac exhaustion are contrary to those generally held. The book is, however, in accordance with modern teaching in essentials, and can be commended to the practitioner.

Skin Diseases and Nutrition

Including the Dermatoses of Children. By ERICH URBACH, M.D., Dozent in Dermatology and First Assistant to Prof. W. Kerl, University Clinic for Skin and Venereal Diseases, Vienna. Authorised translation by F. R. SCHMIDT, A.B., M.D. Vienna: Wilhelm Maudrich. 1932. Pp. 242. $7.

DIETETICS have always been recognised as a factor in the treatment of skin diseases, but so far there has been little exact knowledge to guide our instructions to the patient or his nurse. Dermatologists will therefore welcome the appearance of this manual. The translator has overcome the difficulty that not only the diets but their constituents differ widely in different countries with great skill. His book is divided into two main parts, of which the first contains a dissertation on the effect of nutrition on the chemical structure of the skin, and on its biological reactions to diet. The diseases due to malnutrition are considered in detail; a section is devoted to the dermatoses due to alimentary infections and intoxications, and others discuss dermatoses caused by disease or dysfunction of the digestive tract, metabolic disturbances, and nutritive idiosyncrasies. In the special part the diet advised in a number of selected skin conditions is considered in detail, and the concluding section deals with food-provoked skin disease in animals. A useful supplement includes a mass of practical information on such subjects as the normal weights of growing infants, the use of food charts for the preparation and calculation of dietaries, and a table of weights and measures.

The subject matter makes somewhat heavy reading for the clinician, and the constant citation from the works of other authorities is rather disturbing. In some cases such extracts seem redundant, in others mutually contradictory. Undoubtedly, however, it is a book which every dermatologist will do well to study, and a copy should be available for the practical guidance of dietitians in the larger clinics and hospitals.

Diseases of the Nose, Throat, and Ear

Third edition. Edited by A. LOGAN TURNER, M.D., LL.D., F.R.C.S.E., Consulting Surgeon, Ear and Throat Department, Royal Infirmary, Edinburgh. Bristol: John Wright and Sons. 1932. Pp. 465. 20*s.*

THIS book was originally produced, in 1924, as the joint work of those engaged in the teaching and practice of the specialty in the Edinburgh Medical School. It was intended as a tribute to the memory of Dr. W. G. Porter, whose manual had passed through three editions before he was killed in 1917. Dr. Logan Turner has had the assistance of Mr. W. T. Gardiner in the section on diseases of the nose, while Dr. Douglas Guthrie has been responsible for that on the pharynx and nasopharynx; Mr. J. D. Lithgow writes on the larynx, Mr. J. S. Fraser on the ear, and Mr. G. Ewart Martin on the chapters on endoscopy and diseases of the œsophagus. The book shows little alteration from the text of the second edition, issued in 1927; 16 new illustrations in the text and seven new plates have been inserted to the advantage of a work which before was notable for the excellence of its pictures. The chief addition is a description of the physiology of the otolith apparatus. The book is only slightly increased in size, is well and clearly written throughout, and the teaching is sound. It remains one of the best text-books on its subject in the English language.

Physical Therapeutic Technic

By the late FRANK BUTLER GRANGER, M.D. Second edition, revised, by WILLIAM D. MCFEE, M.D., Visiting Physician, Department of Physical Therapy, Boston City Hospital. London: W. B. Saunders Co., Ltd. 1932. Pp. 436. 32*s.* 6*d.*

IN preparing the second revised edition of this book Dr. McFee has kept in view the desire of the late Dr. F. B. Granger to instruct the practitioner who wishes to administer physical methods of treatment on occasion without making a specialty of the subject. The general plan of the book remains the same, though a few additions have been made. Among them is a new chapter on physical therapy in diseases of the ear, nose, and throat, contributed by Dr. George R. Rice. Dr. McFee has added some notes on experiments with diathermic currents on animals, which were conducted in order to ascertain the degree of heat which could be produced in different organs.

The part of the book which will provide most interest for readers in this country is the index of diseases, which may satisfactorily be treated by physical methods. In describing treatment for each disease the author has made it his aim to answer the questions, "What, where, how much, how long, and how often?" The forms of treatment most often prescribed are electrotherapy and ultra-violet ray therapy. Massage and hydrotherapy receive scarcely adequate attention. Under the heading hypertrichosis the use of X rays is rightly condemned, and the removal of superfluous hairs by electrolysis is described. A method of treatment by fulguration is also noticed; the skin around each follicle is sparked until it acquires a greyish discoloration, and the hair can then "be forcibly pulled out." If force has to be used in extracting the hair it does not seem likely that this form of treatment can destroy the follicle. The book is beautifully prepared. Several illustrations, notably pictures of apparatus and of patients under treatment, could have been spared, since they give no information of use to the medical reader.

Gynäkologische und Geburtshilfliche Diagnostik

In Tabellenform. By Prof. Dr. HEINZ KÜSTNER, Leipzig. Munich: J. F. Lehmann. 1932. 65 tables. Mk.11.40.

THE author of this small book maintains that a general practitioner's interest in medicine is becoming limited to diagnosis because adequate treatment requires special apparatus and equipment. He has therefore thought fit to compile a series of tables which describe the various diseases and abnormalities met with in gynæcology and obstetrics, and indicate their clinical features and pathology. So far as the book goes the result is satisfactory. The illustrations are exceptionally good, and include some beautiful coloured plates. The tables indicate in column form notes of symptoms, physical signs, pathology, and prognosis, and the whole field is covered. The obvious objection to this scheme is that practitioners get more help from a symptomatological approach rather than from notes on individual diseases.

The work should serve as a useful cram book for final-year students. It is essentially a German counterpart of the lists of causes and diseases which are popular in the medical schools of this country.

The Marketing of Literary Property

By G. HERBERT THRING. With a letter to the author from Mr. G. BERNARD SHAW. London: Constable and Co., Ltd. 1933. Pp. 242. 7*s.* 6*d.*

THE literary property of the medical profession is to-day large, for the specialisation of the calling is multifold, and the impulse to express the personal view is widely felt. The property though imposing in the mass is not necessarily valuable to individual owners, and this is inherent in the circumstances giving rise to much of it; for, speaking generally, it is the special subject that asks regularly and often for a record of developments along particular lines, while the more the subject is special the less will its literature be in common demand. And, unfortunately both for author and publisher, the production of a scientific treatise is as costly as, and usually much more costly than, that of a popular book.

Mr. Thring was for 30 years secretary of the Society of Authors, and no one can be better qualified than he to write a book on literary property, its value, and the methods for its disposal. He has set out here the copyright law of this country and our Dominions, and of the United States, with a chapter on the international position. He has analysed the various forms of contract which prevail in the publishing of books, and has set out under the obvious headings the points which have to be considered in dealing with different categories of literary production. There is no chapter that applies in particular to medical authors, but the explanations clause by clause of certain of the agreements that medical authors may be invited to sign afford valuable information. In a wise and amusing prefatory letter Mr. Shaw desires a wide circulation for the book, and the book deserves it.

THE LANCET

LONDON: SATURDAY, FEBRUARY 11, 1933

THE MIND IN UNEMPLOYMENT

AMONG the evils which unemployment brings in its train none is more alarming than impairment of mental health in the workless population. Something has been done of late in this country to counteract such influences by the provision of training centres, opportunities of recreation and physical exercise, organisation of unremunerative but satisfying work, and other schemes, such as those initiated by the Society of Friends. But there has been little precise information available about the form of ill-health chiefly found among the unemployed, or about the circumstances in which it is most likely to develop. Some studies that are now being carried out on a London group of unemployed suggest that neuroses are seldom found where there has not previously been evidence of a definite disposition to such disorders in response to any social or individual stress. It is not only in the form of well-defined neuroses, however, that the results of enforced idleness manifest themselves. There are numerous less obtrusive deviations from the normal balance of the personality that are the almost inevitable outcome of insecurity, dependence, and lack of satisfying occupation. These deviations may most strikingly be encountered where occupation had previously been constant rather than casual, and there had therefore been greater security; where, moreover, the work had made sufficient demands on the capacity of the worker to afford him grounds for a feeling of worth and adequacy.

In a valuable pamphlet[1] just issued by the National Committee for Mental Hygiene in the United States, Dr. GEORGE PRATT sets out the responses to economic adversity which are most frequently found, and the means by which they may be combated. It is addressed not so much to physicians, who may be called on to deal with definite mental disorder, as to social workers, nurses, and those who administer relief on official or voluntary bodies. They it is who are daily in contact with hitherto normal and on the whole contented people who are now unwillingly obliged to change the habits of their lives, and are deprived of their usual outlets and means of satisfaction. Where there is danger of a gradual deterioration of morale and the development of apathy, despair, self-pity, or resentment among the unemployed, it is necessary that those who attend to their material needs should also take into account those psychological factors which are of the utmost importance for the future. They must recognise that truculence or invalidism may be understandable responses to a changed environment and not merely the expression of a habitual antisocial attitude or of a psychopathic personality. The situation is not dissimilar from that which obtained during the late war, with its prolonged and almost intolerable stresses to which many proved unable to adapt themselves. The present troubles may be less terrifying and less violent than those of war, but they are, for the continuously unemployed, insistent and without abatement or lull; they occur in the setting of daily life and are associated with subtle but wounding conflicts within the family. A morose irritability or a gloomy resentment is often visited upon the immediate relatives though it is primarily directed against the social conditions which have created their insecurity and misery. The psychological play in such a situation is not far to seek; it is described very simply in Dr. PRATT's brochure.

The manner in which the social worker or administrator of material relief can take a part in diminishing these evil effects of unemployment is, as Dr. PRATT points out, more a question of his or her habit of mind and freedom from emotional entanglement than of any active interference. Where interference is required it will generally be in the presence of deviations from health so severe as to require psychiatric attention. But the great mass of depression, suspicion, and resentment which is the fruit of unemployment will yield in some measure to sympathetic (not sentimental) understanding, and sometimes to advice. The part of the general practitioner in providing such mental hygiene is difficult to over-estimate. But equally important, however, are those measures for which the community, rather than individuals, must be responsible, and which provide means of occupation and recreation, thus keeping alive self-respect and preventing a corroding dissatisfaction. It will, in most cases, be imperative that these activities should be begun by outside agencies, rather than by those who will benefit from them, for in the sufferers initiative has often become weak after months or even years of unemployment, and there will have been little or no preparation for the use of a leisure that may be unwelcome and turn to tædium. The spread of schemes for dealing with the mental problems of the unemployed is a hopeful sign in this country.

THE PATHOLOGY OF APPENDICITIS

ACUTE appendicitis is one of the most common and dangerous of the surgical emergencies, and there is a good deal of evidence that mild attacks of inflammation of the appendix occur much more frequently than is generally supposed. Our knowledge of the exact pathology and ætiology of the disease is, however, far from complete, and any serious contribution to their elucidation is to be welcomed. Prof. L. ASCHOFF has long been interested in appendicitis; he wrote a monograph on the subject as long ago as 1908, and his views on the pathology of the disease are now well known.

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[1] Morale. The Mental Hygiene of Unemployment. By George K. Pratt, M.D. The National Committee for Mental Hygiene, New York. 1933. Pp. 64. $0.25.

In a more recent publication,[1] he brings forward further evidence in their support. He has always held that appendicitis is an enterogenous infection arising on the surface of the mucosa, and in the present work he again denies the possibility that the disease may ever be blood-borne. No doubt this conception of the process is correct in the majority of cases, and Aschoff himself has produced *a wealth of evidence in support of it*; but it may be questioned whether it is justifiable to exclude altogether the possibility of a hæmatogenous infection. Twenty years ago F. J. Poynton and A. Paine [2] demonstrated the production of appendicitis in young rabbits by the intravenous inoculation of streptococci, and it seems unreasonable to rule out entirely the likelihood of a similar process occurring in man. Prof. Aschoff, however, will have none of it, and in the present study concerns himself entirely with the recognition of the organisms responsible for the lesion and their mode of action. In addition to the usual bacteriological methods, Prof. Aschoff has worked largely with direct smears, a valuable technique which has unfortunately been neglected in recent years. A large number of inflamed appendices were examined by him in this way, and control observations were made on normal organs removed at operation or obtained from the post-mortem room.

Briefly, the conclusions he arrived at are as follows. The normal appendix has a flora of its own which is quite distinct from that of the cæcum, and consists chiefly of gram-positive cocci and fine gram-positive rods. In smears taken from the *lesions of acute appendicitis* organisms having a similar morphology and staining reaction predominate, and, a point which Prof. Aschoff regards as highly significant as indicating their pathogenicity, these are the organisms which are most actively phagocytosed by the cells of the exudate. Cultural observations show that about 70 per cent. of acute infections of the appendix are due to one of the intestinal streptococci, pneumococci accounting for another 17 per cent.; and taking all the evidence into consideration it is concluded that acute appendicitis is due to infection of the mucosa with organisms which are normal inhabitants of the viscus. How is this infection brought about? G. Ricker has developed the ingenious theory that appendicitis is primarily due to vascular *disturbances of the organ* brought about by reflex irritation of their nerves, a process akin to the "chill" mechanism of respiratory disorders. In severe cases the vascular disturbance is sufficiently intense to cause necrosis or infarction of the tissue, which then becomes invaded by microbes from the lumen. Aschoff, however, denies that a vascular disturbance is the primary lesion; he believes that such changes are secondary to a bacterial invasion of the surface of the mucosa. By the use of the oxidase reaction he claims that such primary foci can be demonstrated in histological preparations when they might well be missed in material by the ordinary routine methods. And the study of the lymphatic system of the appendix, illustrated by *really beautiful figures*, which is contributed by Dr. H. Seng, bears out his contention that nothing is easier than for an infective process to spread from a small primary focus in the mucosa throughout the whole of the organ.

The actual infection of the mucosa is, Aschoff holds, independent of any trauma; it occurs, for example, distal to and not in the immediate neighbourhood of a stercolith. But it seems to be due to an increase of virulence of the bacteria normally present in the lumen. How this increase of virulence is brought about is quite uncertain, but it depends largely on *stagnation of the contents*. A regular flushing of the appendix with fæcal matter would act beneficially, for it would result in the replacement of the appendix flora by that of the cæcum, but it appears that such a flushing occurs only irregularly and imperfectly, frequently failing to extend to the distal third. Stagnation of fæces in the proximal portion of the tube would, on the other hand, favour retention of the contents of the extremity; and kinks or bends would have a similar effect. Prof. Aschoff presents his thesis with great skill, and supports it with a wealth of facts and illustrations, but it must be confessed that it fails to carry complete conviction. It would not be difficult to adduce contrary arguments of considerable weight; and a good deal more work will be necessary before it can be accepted as proved that the virulence of a normal inhabitant of the alimentary canal can be so raised by a moderate degree of stagnation as *to render it capable of breaking down the natural* defensive mechanism of the mucosa. Nevertheless, Prof. Aschoff has written a most stimulating work which will well repay careful study.

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THE MARKETING OF MILK

The medical profession is unanimous in its advocacy of milk as part of the diet, provided it is *clean and free from infection*; but, owing to doubts as to the quality of some of our milk-supplies, it has, on the whole, hitherto thrown its influence against rather than for an increase of milk consumption. This sentence is taken verbatim from page 64 of the report,[1] which appeared on Monday, of the Milk Commission appointed *last April* by the Minister of Agriculture under the Agricultural Marketing Act; and the commissioners, of whom Sir Edward Grigg is chairman, are of opinion that nothing can better serve the *health of the community*—and incidentally the interests of the milk industry—than the removal of these doubts. Contrariwise, a sympathetic understanding, on the part of the medical profession, of the position of the producer and distributor is eminently desirable for the speedy solution of the problem of a pure milk-supply. Perhaps the most formidable obstacle

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[1] Appendicitis: its Ætiology and Pathology. By Ludwig Aschoff. London: Constable and Co., Ltd. 1932. Pp. 150. 15*s*.

[2] Proc. Roy. Soc. Med. (Path. Sec.), 1912, v., 18.

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[1] Ministry of Agriculture and Fisheries. Report of the Reorganisation Commission for Milk. Economic Series No. 38. H.M. Stationery Office. Pp. 228. 6*d*. The members of the Commission are Sir Edward Grigg, Prof. A. W. Ashby, Mr. F. N. Blundell, D.L., Mr. A. E. Cutforth, F.C.A., and Major-General Sir Philip Nash, with Mr. J. B. Baber, secretary, and Mr. A. R. Manktelow, assistant secretary.

to its attainment is the plea of the producer that he gets so little money for his milk that he can scarcely make a living out of its production, with the corollary that it is a sheer impossibility for him to do more than he does now in the way of providing healthier stock, more hygienic premises, or greater cleanliness in collection and transmission of milk.

The milk producers point to the discrepancy between the money they get for liquid milk and the price charged to the consumers, and when the perennial milk war is settled each year between producers and distributors, by the formulation of an agreed milk price, the problem has not been solved even for the year. It has only been shelved in favour of the distributor. For it must be borne in mind that the root of the difficulty lies in the fact that there are two prices for milk: one for that sold to the public as liquid milk, the other for that sold for manufacture into milk products, loosely called "surplus" milk. The difference in price between these two kinds of milk is so great that the producer makes every effort to sell his milk for liquid consumption, and not for manufacture; and whether he can do so or not is largely a matter of geographical position. Should his milk lie within the area of supply of a large town he can market as liquid milk all he can produce, whereas if he is far away from such a market most of his milk has to be sold at the price of milk destined for manufacture. This dual usage makes the interests of the distributor dominant in any process of bargaining. The distributors will naturally prefer to draw supplies from their own neighbourhood, but, should local producers combine to get what they consider a fair price, the distributors can then go a little further afield into areas where the prevailing price is the price of milk for manufacture. Just because there is an almost unlimited field of milk production for them to draw upon, and because the farming interests have in the past been unable effectively to combine, the position of the producer has been an unhappy one. How large may be the proportion of manufactured milk appears in a survey issued not long ago by the Hannah Dairy Research Institute. which showed that of the total milk produced in Scotland only 59 per cent. was marketed in liquid form, 17 per cent. was consumed at the source, and the remaining 24 per cent. went to the manufacturers. The commissioners propose to solve the difficulties of this situation by setting up a series of boards under the Agricultural Marketing Act, with two main objects in view: (1) the strengthening of the position of producers by enabling them to negotiate as a solid body with one voice and with adequate information, and by ensuring that negotiated agreements are universally observed; and (2) the coördination of the efforts of all concerned—producers, distributors, and manufacturers—to secure prosperity for the whole milk industry of the country, with adequate safeguards for the interests of the consuming public. The organisation would include three new bodies, (1) a Central Producers' Board, (2) a Central Dairymen's and Manufacturers' Board, each with its own regional organisation, and (3) a Joint Milk Council consisting of members of these two boards, along with three outsiders. The ownership of all milk other than that sold by producer-retailers would be vested in the Producers' Board, but the Joint Council would fix from time to time the price of milk, both for liquid consumption and for manufacture. By means of a system of regional prices, and of devices to reduce inequalities, it is hoped to strike a fair balance between the prices paid for the two kinds of milk.

This is in brief the discharge by the commissioners of their duty to draw up a scheme or schemes for regulating the marketing of milk; but they have gone further in many directions on the liberty given them to make recommendations with respect to the matters investigated. They have for instance examined the consumption of liquid milk in this country, in regard to which statistical data are extremely meagre, and they estimate the present total requirements of the liquid milk market of England and Wales as between 607 and 730 million gallons, with a daily consumption of milk per head of population of between one-third and two-fifths of a pint. This estimate agrees closely with the careful study on p. 342 of this issue by Dr. JESSIE GELLATLY of the consumption of milk in some East Anglian arable farm counties. The commissioners point to some astonishing variations in the per-capita consumption in various English towns: Hull and Cardiff are surprisingly low, Bournemouth and Chichester surprisingly high. There seems however no doubt of the downward trend of liquid milk consumption throughout the country as a whole; partly no doubt as a result of the need for economy in the domestic budget, for the decline in retail milk prices has admittedly not been commensurate with the fall in producers' prices. But there is a further potent factor in the alarm aroused among the public by statements that milk is unsafe unless treated by heat and that when so treated its nutritive value is impaired. Propaganda on the part of the medical profession is regarded as deterring many parents from giving milk to their children to drink. To meet these doubts the commissioners have set before the producers, as one of the chief objects of reorganisation, an improvement in the quality of milk. Some improvement there has been in the last decade, an important factor being the recognition of certain statutory grades of milk, and the commissioners are assured that in some parts of the country at least much of the milk produced is now of Grade A standard, though not sold under that designation. They think it would be convenient now to reduce to one the number of official grades, this "special" grade to be produced under the same conditions as the present Grade A (tuberculin tested). Although not unanimous themselves, the commissioners regard it as the view of medical officers of health that the safety of the milk-supply, at least in large towns, can be ensured only if milk below the tuberculin-tested grade is efficiently pasteurised. But they fear the adverse effect of compulsory pasteurisation on the producer who lies in close proximity to consuming centres, and they state with insistence that pasteurisation can never be a substitute for clean production. When carried out it should be under thermostatic control, and repasteurisation is held to be so undesirable as to be totally prohibited. The continued sale of unbottled milk is deprecated, but we miss in an otherwise compendious report any allusion to the paper carton which might do more than a little to popularise milk as a food.

The commissioners attach importance to a uniform and effective administration of the Milk and Dairies Order, although they make no recommendation how this is to be obtained. Finally they would like to see a whole-time chief veterinary inspector take his place in the official hierarchy of each county and county borough; some counties in which whole-time veterinary departments have been set up have already taken over the work irrespective of whether it comes under the purview of the Ministry of Health or of Agriculture, and they think a whole-time service would in the long run prove cheaper as well as more effective than the present system.

ANNOTATIONS

A B.M.A. COMMITTEE UPON MEDICAL EDUCATION

At a Council meeting of the B.M.A. held on Jan. 25th a special committee on medical education and examination was set up upon the receipt by the Council of an emergency committee's report on the subject. Sir Henry Brackenbury, presenting that report, explained its origin as due to the recent inquiry held at Cambridge and the subsequent discussion of the problems at a joint conference between the representatives of Oxford, Cambridge, and London Universities, and of the English Royal Colleges. At that joint meeting the personnel, observed Sir Henry, was entirely composed of teachers, and the advisability of evidence being given before it by a representative of the B.M.A. was held doubtful as a too indirect method of approach. The decision, however, had been come to by the chairmen of various committees and himself that a special committee of the Association should be set up, and an emergency body had consequently produced the report which he was submitting, and which recommended the institution of a special committee. The reference to the special committee, proposed by the emergency body, was:

> "To consider and report upon (*a*) the conditions that should be required for entrance upon medical studies, (*b*) content of the curriculum, the position of the various subjects therein, and their proper relationship to one another, (c) the nature of examination or other tests which should be satisfied prior to graduation, (*d*) whether, and to what extent, post-graduate education or experience should be required prior to registration as a fully qualified medical practitioner or licence to practise independently as such."

The procedure will be that the special committee will issue an interim report to the Council in June in order that the full document may come before the annual Meeting of Representatives in July in Dublin.

AFTER-EFFECTS OF SPINAL ANALGESIA

There has for long been a vague notion that remote after-effects of a nervous or paralytic kind are not uncommon following spinal anæsthesia. Most anæsthetists have heard tales of this sort, but have been unable to get hold of any definite instances or proved facts. The excellent paper read by Mr. H. K. Ashworth and the discussion which followed it at the section of anæsthetics of the Royal Society of Medicine on Feb. 3rd have done a great deal to clear up the position. The truth seems to be that serious after-effects, in the absence of errors of technique or dosage, do not occur, but that slight, remote after-effects, in the form of headaches and weakness or tingling of the legs, do occur in a very small proportion of cases. Further, it was clearly shown that in a number of cases nervous symptoms appearing for the first time at a date subsequent to an operation under spinal analgesia have been attributed to the injection without sufficient investigation. A thorough examination proves the symptoms to be due to some organic disease quite unrelated to the spinal injection, such as chronic kidney trouble or varicose veins. By following up some 270 patients during a three-year period Mr. Ashworth succeeded in bringing up for examination 30 patients who, according to their answers to his questionnaire, were suffering from remote effects following operation under spinal analgesia. Out of these 30 only seven were held after careful neurological investigation to be right in attributing their symptoms to their operative experience. Two of these patients suffered from one-sided deafness, one of whom has since recovered. Headache has been regarded as the most frequent after-effect of spinal injection, but speakers at the meeting differed widely in their interpretation of the cause of this symptom, and consequently in the treatment recommended for its prevention. Mr. Ashworth regarded headaches as due either to leakage of cerebro-spinal fluid at the site of puncture, or else to an upset of the choroidal plexus function secondary to meningeal traumatic irritation. When the latter was the cause he believed in repuncture for a cure. Several speakers, notably Dr. R. E. Apperly, believed that the Trendelenburg position carefully maintained for hours after operation, and complete stillness of the patient, obviated headache. On the other hand, Mr. E. T. Milligan stated that out-patients who were allowed to walk out of hospital after minor operations performed with low spinal injection often remained free from headache. Mr. Dickson Wright laid stress on the force of suggestion, and on the fact that headaches afflicted chiefly those who were subject to that complaint.

SURGICAL STIMULATION OF BONE GROWTH

A new method of stimulating the growth of bone is described by Dr. Albert B. Ferguson,[1] roentgenologist to the New York Orthopædic Dispensary and Hospital. In his preliminary report he points out that it has often been observed that a bone has recovered some of its length after a fracture with shortening, and that this phenomenon is in accordance with a general principle of bone physiology which deserves more attention than it has received. The principle is that "during the period of epiphyseal growth interruption of the medullary blood-supply to the metaphysis without interruption of the periosteal blood-supply to the end of the shaft produces an increase in the speed of longitudinal growth of the metaphysis affected." Ferguson's paper is designed to show the surgical application of this principle to secure stimulation of growth in suitable cases. In children, after osteotomy of the tibia, the upper end of the fibula was usually found to be short in relation to the tibia, which suggested that interruption of the medullary supply of the tibia had stimulated growth. A study of various cases in which such interruption had occurred was held to confirm these conclusions, and up to last October medullary section had been carried out in 16 cases in which there was shortening of the leg. The operation is a simple one, consisting of drilling into the bone half-way from the epiphyseal line or lines to the middle of the bone, inserting a knife and dividing the medulla transversely, the wound then being closed in the usual way. Whenever medullary section is done on the tibia it is done also on the fibula, the upper end of the femur not being used unless the shortening is great. Ferguson gives the order of preference as (1) lower end of femur, (2) upper end of tibia and fibula, (3) lower end of tibia and fibula, and (4) upper end of femur. A sufficient number of metaphyses are treated to gain the required length, the gain being estimated at ⅛ in. annually for each metaphysis treated up to the age of 14 for girls and 15 for boys. The growth seems to be more rapid in the first year after operation, but Ferguson suggests that the operation can safely be repeated after two to three years, if growth slackens. In no case treated has there been any evidence of disturbance of the bone other than the change in the rate of growth. The children who have undergone this medullary resection are to be followed up through adolescence, to determine the actual gain in length over a period of years for the various bones at various ages.

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[1] Jour. Amer. Med. Assoc., Jan. 7th, p. 26.

SUSCEPTIBILITY TO TUBERCULOSIS

The theory set out in the report on Tuberculosis in the African Native[1] that certain of the natives recruited for work in the gold mines exhibit a soil hyperallergic to tuberculosis, which leads them to succumb, when on the mines, to acute fatal tuberculosis, was developed by Prof. Lyle Cummins in a communication to the Tuberculosis Association which we reported last week. This liability to contract acute infection was found to vary directly with the severity of the reactions of the subject to tuberculin tests; "positive plus" natives were more liable than "positive" natives, and the latter more liable than "negative" natives. Before a superstructure is raised on the existence here of hyperallergic soil, it must be remembered that a more obvious explanation is difficult to exclude. When they left their homes for the strange environment of mining service, the "positive plus" natives may have had more or less active tuberculous foci which had eluded even a vigilant clinical examiner. Such a vast change in environment might be expected to activate latent foci in direct proportion to their previous activity; the tuberculin reactions might be regarded as some measure both of the presence and activity of these foci. A condition of hyperallergy to tuberculosis would appear to have been postulated in contradistinction to the idea that resistance to tuberculosis may be acquired from subinfection. But the theory that resistance to tuberculosis is acquired from subinfection is hard to substantiate. Tuberculosis as an infectious disease does not display the clinical features of other acute infectious diseases, such as scarlet fever, influenza, small-pox, and the like, from which the sufferer recovers by establishing antibodies to counteract the toxins of the disease. Attacks of such diseases end in a definite way as these antibodies come to be formed. There is no such clinical course about tuberculosis to give support to the view that useful antibody reactions occur. On the contrary, evidence points to the fall of tuberculosis mortality among Europeans, and indeed among negroes in America, as being a measure of contemporaneous rise in the social standing of the communities affected. Although this outlook upon resistance to tuberculosis differs from that of an allergic soil on the one hand, or the effect of subinfection on the other, as claimed by Prof. Cummins, we note that his practical advice is the same as if it were based on different theoretical grounds—namely, that natives on gold mines must be housed, fed, and cared for on generous lines.

Another discussion reported in last week's LANCET also centred round the susceptibility to tuberculosis attributed to local damage in the tissues of the lung following upon the inhalation of certain toxic dusts. Of these silicosis has hitherto received the most intensive study, but recent work is disclosing that another form of dust, that of asbestos, is even more injurious to the physiological functioning of the lungs, while it is only second to silica in increasing susceptibility to superimposed tuberculous infection, or to the reactivation of tuberculous foci already present. Evidently, although agreement has not yet been reached on minor points, the old idea that the lungs are mechanically abraded by sharp particles of dust has been definitely discarded. The available evidence indicates that the dust particles pass into solution in the lung tissue, upon which they then react according to their chemical composition. Thus, on one hand, lime salts pass away harmlessly, while silica compounds, whether in the form of quartz or asbestos, set up a fibrous reaction which varies in type according to the kind of dust concerned. On the other hand, insoluble particles, such as dust from carborundum (silicon carbide), appear to be almost inert, and to remain in the lungs without provoking any reaction. Thus we arrive at different classifications for dust. E. H. Kettle divides them into active or inert; the former, such as silica and asbestos, produce active lesions in the tissues, and appear to exert a definite influence in assisting the growth of tubercle bacilli. Here we are dealing with susceptibility to tuberculosis based upon either a physical interference with the functioning of the lung tissue, or the presence of a foreign element favourable to the tubercle bacillus, or, possibly, upon both combined. The further the study of the pneumoconioses goes, the more evident it becomes that the effects of each dust must be studied separately, especially in relation to its effect on susceptibility to tuberculosis.

THE HOUR OF BIRTH AND DEATH

In a study of maternal mortality and stillbirths in New York State, J. V. Deporte[1] found that neither live births nor stillbirths were spread evenly over the 24 hours. The maximum number of live births was recorded between 3 and 6 A.M., exceeding by more than 40 per cent. the minimum between noon and 3 P.M. There were relatively fewer births in the three groups between noon and 9 P.M. than at any other time. In an analysis of very much more extensive material (the 350,106 live births registered in Switzerland between 1926 and 1930), Dr. E. Jenny[2] finds a very similar distribution. Whereas nearly 100,000 of these births took place between 3 and 9 A.M., only 75,000 are recorded as taking place between 3 and 9 P.M. As with the New York figures, the maximum is at 3 to 6 A.M., and exceeds the minimum by nearly 40 per cent. It is at these hours that metabolism is at its lowest, and temperature and pulse-rate reach their minimum. On the other hand, the distribution of stillbirths, according to Deporte's somewhat limited figures, is precisely the reverse. Most of the stillbirths, he found, occurred during the day, the maximum number falling between the hours of 9 and 11 A.M., and the minimum between midnight and 2 A.M. Measured as a percentage of total births the stillbirth rate was highest (4·7 per cent.) between 3 and 5 P.M., greater by nearly 60 per cent. than the minimum (3 per cent.) between midnight and 2 A.M. Jenny provides no figures for stillbirths, but he has analysed 12,099 deaths (at all ages) registered in Aarau between 1894 and 1929. The distribution over the 24 hours is much less variable than with the births, though there is a suggestion of two maxima, one at 7 A.M. (as night turns to day), the other at 5 P.M. (as day turns to night). The numbers are too small to be conclusive, and, as Jenny points out, the combination of all ages and all causes of death may make the material heterogeneous and obscure the issue. He suggests that knowledge of the hour of death for individual causes would emphasise the special hours of risk, and be of assistance in treatment of the sick.

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[1] See THE LANCET, Jan. 14th, 1933, p. 100.

[1] Maternal Mortality and Stillbirths in New York State, 1915–25. New York State Dept. of Health, 1928.

[2] Tagesperiodische Einflusse auf Geburt und Tod. Schweiz. Med. Woch., Jan. 7th, 1933, pp. 15–17.

THE EPIDEMIOLOGY OF CHANCROID

Dr. Albin Proppe,[1] of the dermatological department of the Berlin-Britz Municipal Hospital, draws attention to the sudden outbreak of chancroid which occurred in Germany in 1928. The whole country was not affected, but increased incidence of the disease was specially noted in Berlin and the Ruhr and Lower Rhine districts, as well as in Bremen, Altona, Königsberg, Gleiwitz, Reichenbach, and Dresden. On the other hand, large areas of Central Germany such as Hanover, Brunswick, Magdeburg, Leipzig, and Chemnitz, as well as Mecklenburg, Breslau, and the whole of South Germany entirely escaped. In the Berlin-Britz Hospital a chancroid wave was first noted in April, 1928, and in August reached its first peak, which was followed by a second in September and October, 1929, and a third in January, 1930. The epidemic then began to subside, though a few rises in the incidence of chancroid were still observed, the highest being in November, 1930. Since February, 1932, however, the disease appears to have almost entirely died out. Proppe alludes to similar epidemics of chancroid which have occurred in recent years in various foreign cities—for example, in Kharkov, Odessa, Prague, and Vienna in 1925–26, Belgrade and Trieste in 1926, Bucharest in 1926–27, Moscow in 1927, Vilna in 1929, and Hungary in 1929–30. Although chancroid is regarded by many authorities as a filth disease, Proppe found that the incidence of lousiness in his chancroid patients was no higher than in those suffering from gonorrhœa, being about 10 per cent. in each group. On the other hand, there was some evidence that in comparison with syphilis or gonorrhœa, chancroid had been contracted from prostitutes in an unusually high proportion. Bruck's observation that women may be carriers of the Unna-Ducrey bacillus without any clinical evidence of chancroid should be regarded with caution, in view of the fact that Pfeiffer's "Streptococcus urethræ" may easily be mistaken for the causal organism of chancroid. Although the cause of the epidemic is not entirely explained thereby, the disease appears to have been introduced into Germany by sailors coming down the Rhine who had been infected in Dutch ports. A similar introduction of the disease from abroad had occurred at St. Etienne in 1926, when out of 109 chancroid patients 64 were foreigners, most of whom were Poles.

ARTIFICIAL MENOPAUSE

MOST gynæcologists prefer not to remove both ovaries when performing hysterectomy for non-malignant conditions before the climacteric. On the other hand, some have advocated extirpation of both ovaries with the uterus, because they believe that the subsequent surgical menopause, though more severe, is shorter and therefore preferable. J. V. Sessums and D. P. Murphy[1] have studied the after-histories of 91 patients subjected to hysterectomy, with conservation of one or both ovaries, before the age of 36. They found that 40 (44 per cent.) of these patients *developed hot flushes before the age of 40; whereas* of 52 patients in whom the uterus and both ovaries had been removed, 42 (81 per cent.) developed hot flushes before that age. The flushes were described as severe by 37 per cent. of the first group, and by 73 per cent. of the second group of patients. The onset of menopausal symptoms was thus earlier in those who had had both ovaries removed. Conclusions about the duration of menopausal symptoms require observation over a very long period; only 25 per cent. of the 82 patients who experienced flushes described them as having ceased. In this series apparently more of the patients with ovaries intact described the flushes as having ceased; yet the "average duration" of the menopause is given as shorter in the group with bilateral oöphorectomy, being 7·2 months on the average in these cases. This conclusion should be regarded with some reserve. The dates of operation are not given, however, though the "total time" of the period of observation extended over 14 years. It is possible that some of the cases have not been under observation for anything like this period. We are informed that surgical menopause following radium treatment may be prolonged; some patients, followed up over a period of as long as 10 or 11 years, still have flushes. It is questionable whether much can be gained by attempts to estimate the duration of menopausal symptoms without differentiating them into mild or severe. Occasional flushes are of little importance, and they may continue over many years. It would be more useful to ascertain the time during which a patient goes on having flushes every day; but not all patients seem to be much troubled by the symptom, even if it occurs frequently. Doubtless the psychological attitude of the patient is a big factor in determining the severity of symptoms following artificial menopause, and this can be greatly influenced by that of her doctor. On the whole, gynæcological opinion seems to favour the retention of some ovarian tissue in a premenopausal hysterectomy.

BRITISH SPAS

A NEW edition has appeared of the handbook of the British Spas Federation,[2] compiled from the reports of the local medical committees for the use of the medical profession. Sir Humphry Rolleston supplies a short introduction, and there is a foreword by the Committee for the Study of Hydrology in Great Britain. The committee call attention to the fact that there is in England little or no provision made in medical education, under graduate or post-graduate, for the study of this form of treatment. For more than ten years they have endeavoured to fill this gap by periodical illustrated lectures and by conducting parties of medical men and students to the spas. This attempt to make the subject better understood by the medical profession has been made financially possible by the British Spas Federation.

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[1] Dermat. Zeitschrift, 1932, xxxv., 35.

[1] Surg., Gyn., and Obst., 1932, lv., 286 and 728.

[2] The Spas of Great Britain: the Official Handbook of the British Spas Federation. Bath: Pitman Press. 1932. Pp. 230.

This handbook contains a variety of information, geological, historical, topographical, and—more important—medical indications. The latter are of chief interest to the practitioner, and might perhaps have taken a more prominent place in the text. The judicious comparison of a group of spas may be of value. The biological properties of waters and muds are now much discussed on the continent. Certain observations are here recorded on the action of the Buxton waters on vegetable growth, and on the bactericidal action of the old sulphur water at Harrogate. It would be interesting to learn whether the waters of Bath, which, coming from a depth of some 5000 feet, shows signs of any biological properties of this nature. From Cheltenham comes a discussion on the general actions of baths; the aeration and whirlpool baths, devised in England during the war, are regarded as stimulant remedies in atonic nervous disorders. No mention is made here or elsewhere of sedative baths in the treatment of cardiovascular and nervous cases. Very little information seems to be available about the composition and mode of action of peats and muds, which are more and more employed in bath establishments in England, especially for rheumatism.

It is regrettable that some British spa authorities still think it necessary to attach foreign names to most of the baths in common use; it would appear to the uninitiated reader that the Scotch douche is the only one which belongs to these islands! The medical committees have presented a varied and interesting collection of information. The resources of civilisation are evidently by no means exhausted at the health resorts, and there is still scope for British energy and enterprise.

PROBABILITIES IN MODERN WARFARE

SINCE the responsibility for the care of casualties in any war falls upon doctors, the medical profession has a special interest, apart from that of the thinking citizen, in the forms which warfare would now take. Last year the Inter-Parliamentary Union published the views of 19 experts belonging to nine different countries on the probable characteristics of the next great war; this book has just been republished in a popular edition [1] and deserves far more attention than it received on its first publication. To say that it is a terrible book might give a wrong impression, since it is only by exercise of imagination that the presentation of the facts, figures, and opinions can be translated into human terms. The impression is left that a future war would not merely be an intensified repetition of the last one, but that it will be of quite a different character. Just as the old wars between barbarian tribes were wars of extermination so, after passing through the stage of professional armies and of the "nation in arms" as exemplified by the late war, the advent of air and chemical warfare has made strategy revert to the primitive idea of extermination; the nation in arms will be the nation under fire—a very different matter. The results of the use of modern air power would be, in effect, to bring a whole country within range; chemical agents would be of immense use against an unprotected civilian population; the destruction of the "nerve centres" of government and industry are almost certain to be the immediate objective. The question remains whether their destruction is possible. "In the course of manœuvres 250 aeroplanes took part in a night attack on London. According to military estimates only 16 of those were discovered by searchlights, and even under the most favourable circumstances it is not certain that even these would have been all shot down." As to the results, Prof. Langerin stated that 100 aeroplanes, each carrying a ton of gas, could cover Paris with a gas cloud 20 metres thick in one hour. Besides gas, thermite bombs weighing only 1 kilogramme each can develop a temperature of 3000° C. and burn through steel, while no extinguishing appliance has yet been invented. With such weapons used under the new strategic conception that "to attack the civilian population is now a basic principle of modern warfare" (Major Endres) a further war might well become mass murder of the civilian population rather than a conflict between the fighting forces.

The possibility of "bacteriological warfare" has been studied by a commission of the League of Nations on Chemical Warfare,[2] and the conclusion is that while there is a possibility of the destruction of crops by parasites distributed by air over a large area there is no immediate likelihood of any use being made of the bacteriological weapon against enemy personnel. Certainly on a priori grounds it is difficult to imagine conditions which could fulfil the four obvious postulates for its use: (1) the effects must be disabling, at any rate, temporarily; (2) it must be communicable in the first instance to the enemy; (3) it must spread rapidly; (4) the side employing it must be protected either by complete isolation or by some form of preventive or curative agent unknown to the enemy.

THE MEDICO-LEGAL SOCIETY

THE Medico-Legal Society has signalised the thirty-first year of its existence by issuing a new journal.[3] In future the transactions of the society will be issued quarterly instead of yearly and will be combined with book reviews and hitherto inaccessible material such as abstracts of foreign literature of medico-legal interest. Dr. Gerald Slot and Mr. Everard Dickson are the honorary editors. Lord Riddell, the president of the society, in a foreword, expresses the hope that the journal will in time provide a complete survey of medico-legal and criminological subjects. The first number promises well. The opening paper by Sir John Collie on medico-legal practice is in light and anecdotal vein, but Dr. F. J. McCann provides more solid fare in his exhaustive survey of impotence in the male and female, a paper which contains much of value to the practitioner as well as to legal and medical specialists in the courts dealing with matrimonial causes. In a retrospect of the history of the society its founder, Mr. Henslowe Wellington, recalls with justifiable pride the many eminent men who have filled its offices, including Lord Justice Atkin, the late Lord Russell, Dr. Stanley Atkinson, and Sir Samuel Evans. He notes that three of the original office-bearers of 1902, Sir William Collins, Sir Walter Schröder, and himself, are still active members.

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[1] What would be the Character of a New War? London: Gollancz. 1933. Pp. 412. 5s.

[2] Document A.16 (1924), ix., of the League of Nations.

[3] The Medico-Legal and Criminological Review. Published for the Medico-Legal Society by Baillière, Tindall and Cox, London. Vol. I., Part I, January, 1933.

There are special reasons why the Medico-Legal Society should attract influential and widespread support. The varied duties which are included under the term "medico-legal" are carried out in England with great ability, but under considerable handicaps. There is no centre for teaching, research, collection and storage of specimens, or the performance of laboratory tests, such as can be found in the great cities of almost every other civilised country, including that part of Great Britain which lies north of the Tweed. The society has for long filled at least a part of the gap, in that it provides a meeting-ground where doctors and lawyers can discuss in amity those thorny problems which too often arouse mutual antagonism in the more heated atmosphere of the courts. Doctors and lawyers have everything to gain personally by a better understanding of each others point of view and perhaps the lay public, over whose bodies, live or dead, the forensic battles rage, stand to gain most of all in the shape of sounder and better informed administration of justice. A case in point was quoted by a stipendiary magistrate in the discussion on Dr. McCann's paper, reported in the new journal (p. 53). An application for an affiliation order was made to the court over which he presides against a man of 69. The defendant produced a certificate with which he had been going about armed for some time and which he had been sufficiently business-like to have had brought up to date. It was signed by a surgeon who had removed his prostate gland, and stated that in consequence it was impossible for him to become the father of a child. The case might well have ended there but for the enterprise of the solicitor who represented the child's mother. He enlisted the help of the medical press and before the adjourned hearing had secured evidence that pregnancy had followed intercourse in at least one known case of prostatectomy. The learned magistrate, arguing no doubt that "what man has done man can do," granted the order of affiliation, a course which subsequent events proved to have been just. The story has several morals, not the least of these being the great value of transactions in which such cases are recorded.

OXYGEN AND CARBON DIOXIDE AS RESPIRATORY STIMULANTS

THE increased use of carbon dioxide as a respiratory stimulant has led to further investigation of its mode of action, and recent work suggests that many of the standard explanations of the effects not only of carbon dioxide but also of oxygen-lack will need to be revised. Some experiments reported in a paper[1] from the department of physiology at the Middlesex Hospital by Dr. S. Selladurai and Prof. Samson Wright, throw some light on this complicated problem. A new point of view, they say, was reached in 1927, when J. F. Heymans and C. Heymans showed that chemical changes in the blood might modify respiration reflexly, without necessarily acting directly on the respiratory centre itself. These workers, with their collaborators, concluded that acute anoxæmia stimulates breathing reflexly for the most part by acting on the carotid sinus and (to a lesser extent) on the aortic nerve-endings, and that its direct stimulant action on the respiratory centre is comparatively unimportant. Prof. Wright and Dr. Selladurai have now re-examined the action of oxygen-lack in the cat. Inhalation of various concentrations of oxygen (4 to 16 per cent.) and of nitrogen were studied in decerebrate and in chloralosed animals. With the carotid sinus nerves eliminated and the vagi cut it seems to be proved that lack of oxygen depresses the "isolated" respiratory centre. The increase in breathing which is often obtained in the intact animal appears to be wholly reflex, and depends upon excitatory afferent impulses in the sinus nerves and the vagi which overcome the direct depression of the centre. Examination of this point in greater detail revealed that the reflex stimulation from the sinuses may under certain circumstances be of greater importance than that produced by the vagi. Apparently the integrity of what Prof. Wright has called the "buffer" nerves enables the respiratory centre to withstand for long periods degrees of anoxæmia which are lethal to it when it has been isolated by section of the vagi and denervation of the sinuses. In view of these results, which confirm in the main those reached by the Belgian investigators in their work on dogs, the classical theories in which oxygen-lack is considered a stimulant to the respiratory centre can no longer be regarded as tenable. Experiments on the circulatory effects of the low oxygen mixtures used do not support the idea that fall in blood pressure is playing any important part in the results obtained.

In a second paper[2] similar detailed studies of the mode of action of carbon dioxide have been made, and here again the classical theories, which assume that the influence of this gas on breathing depends entirely on an action on the respiratory centre, will have to be revised. The results obtained are not, however, so clear-cut. In the cat it is found that denervation of the carotid sinuses usually decreases the rate of breathing and the minute-volume of ventilation—whether the vagi have been previously cut or not. It is concluded that the chemical composition of the blood stimulates the nerve-endings in the carotid sinus in the resting animal to discharge tonic excitor impulses to the respiratory centre. The response to carbon dioxide was usually reduced when the sinuses were denervated, and it was concluded that raised carbon dioxide concentrations stimulate the respiration in part reflexly from the carotid sinus. The effects of vagotomy varied somewhat in different experiments, and it is suggested that carbon dioxide may act differently on the various sensory components of the vagus nerve.

EPIDEMIOLOGY OF THE COMMON COLD

INVESTIGATIONS made at the Johns Hopkins University, with the support of the John J. Abel fund for research on the common cold, include a study, by V. A. van Volkenburgh and W. H. Frost,[3] of the prevalence, distribution, and character of the minor respiratory disorders observed over a space of two years (November, 1928, to November, 1930) in 114 Baltimore families comprising a mean weekly population of nearly 500. Notification was made immediately upon the occurrence in any member of the family of any respiratory illness whatever, including those which were apparently trivial, and on report of a case a staff physician promptly visited the home and obtained a record of the illness by interrogation of the patient or (in the case of children) of the mother. Each case was revisited, usually by a nurse, at short intervals until recovery. The result is a body of very full and detailed data with regard to incidence and clinical aspect. Counting all respiratory illnesses reported, the attack-rate during the first year, November, 1928, to November, 1929, was 318 cases per 100 persons observed, while in the second year it was almost the same—namely, 307 per 100—despite the fact that the first year was marked by a fairly severe epidemic of influenza. The incidence, as would be expected, does not fall equally upon each age. It is at its highest in children under 5 years of age, declines progressively to about the age of 15–19, increases somewhat between 20 and 35, and thereafter declines slowly as age increases. Though the populations in some of the age-groups are very small this course agrees with previous figures reported by J. G. Townsend and E. Sydenstricker,[4] who pointed out that the fall in incidence with advancing years is at variance with the rising death-rate from respiratory disease.

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[1] Quart. Jour. Exp. Phys., 1932, xxii., 233.

[2] Ibid., p. 285.

[3] Amer. Jour. Hyg., January, 1933, p. 122.

The most striking feature of the seasonal distribution is the high prevalence in the autumn, followed through the winter and spring by a series of epidemics. This confirms the previous evidence of W. H. Frost and Mary Gover,[5] which showed that during the season of higher prevalence the incidence curve exhibits a series of oscillations, each of several weeks' duration which, although irregular in sequence and magnitude, cannot be regarded as mere chance fluctuations. The incidence is not therefore, as might readily be supposed, equally spread over the winter months, but consists of a series of distinct epidemics, irregular in spacing and magnitude. Clinical data are given in detail for 1388 cases, some of the symptoms (e.g., irritability) being, perhaps, too subjective to be of very much value. The average duration of symptoms was 16 days, which, taken in connexion with the mean number of attacks suffered (3·07 per person for the year 1929–30), gives an average of approximately 49 days per person per year during which symptoms were present. In other words, on the average this population suffered from symptoms of minor respiratory disease for nearly one-seventh of the year, a figure which seems unduly high in spite of the fact that 10 per cent. of the cases under 5 years of age were complicated by otitis and 3 per cent. by adenitis. The most frequent symptoms were coryza, cough, and sore-throat, and, naturally, presence of the symptoms does not necessarily denote incapacity for work, though a quarter of the patients were confined to bed and the same proportion had fever. From this evidence van Volkenburgh and Frost conclude that the "common cold" implies more than coryza, and that the systemic reaction is more marked than is generally believed.

BACILLARY DYSENTERY IN CHILDREN

THE importance of bacillary dysentery as a cause of infantile diarrhœa in this country has often been emphasised of late years, and in our issue of Jan. 28th Dr. Eileen Harvey described five cases of sudden death (four of them in children) which she regarded as due to this cause. In each of these there was a ring of lymphoid hyperplasia and œdema around the ileocæcal valve, and *Bacillus dysenteriæ* Sonne was isolated from the stools of the sister of one of the patients who was ill at the same time. Dr. D. Nabarro and Dr. A. G. Signy[1] have reviewed the cases of dysentery seen in the Hospital for Sick Children, Great Ormond-street, from January, 1929, to December, 1932, which number 106 in all. Most of them occurred in small ward outbreaks, and in the older children the condition was usually mild; the cases due to the Sonne organism showed a mortality of 4·5 per cent., and those due to the Flexner type 10·5 per cent. The infection was recognised through the routine examination of the stools of all cases of diarrhœa admitted to, or occurring in, the hospital, both for blood and pus and by culture for dysentery organisms. Cultures were made direct from an emulsion of the fæces on to McConkey plates, and the diagnosis of the type of micro-organism was determined both by direct agglutination with prepared rabbit serum and also by fermentation reactions. Most of the cases also had the blood examined at least once for the presence of agglutinins, the authors considering that a "standard" agglutination with any of the strains of dysentery organisms to a titre of 1/125, or a strong agglutination to a titre of 1/50, was presumptive evidence of a recent dysentery infection. They emphasise the importance of using mixed strains of Sonne in carrying out these tests. Clinically, infection was usually characterised by abdominal pain followed by severe diarrhœa. The typical dysenteric stool contained considerable quantities of blood and mucus, with a minimum of fæcal matter. Tenesmus usually occurred, and malaise at onset, with a variable amount of fever. D'Herelle's bacteriophage was tried in the treatment of a few of the children, but with no special success. The effect of serum therapy also was not striking, though Nabarro and Signy recommend the employment of serum (given in repeated doses of 10 c.cm. intramuscularly) in cases which are obviously acutely toxæmic. General measures to prevent spread in the ward should involve the patients being treated as highly infectious, and no nurse who handles the stools should be allowed to prepare the food of another patient.

REMOVAL OF THE CORPUS LUTEUM OF PREGNANCY

EVIDENCE is accumulating that the corpus luteum is not necessary for the maintenance of pregnancy after the first few weeks. It must be the experience of a fair number of gynæcologists that the corpus luteum, or the ovary which contains it, can be removed and the pregnancy go to term. In spite of this the evidence is very strong that the corpus luteum is essential for the implantation of the fertilised ovum, and there is good reason to believe that its influence is required in the first few weeks; later in pregnancy its control of the attachment of the ovum is perhaps shared by the placenta. R. M. Corbet[2] not long ago described a case in which the ovary containing the corpus luteum of pregnancy was removed 42 days after the first day of the last menstrual period, and the pregnancy nevertheless went to term. The importance of the case depends upon the early date at which the operation was performed. On the other hand, O'Donel Browne[3] reports a case in which both ovaries were removed during the early months of pregnancy and in which the ovum died and abortion and post-partum hæmorrhage followed. Cases are on record in which both ovaries have been removed during pregnancy, in spite of which pregnancy proceeded normally (Carlton Oldfield, Essen Moller). It is well known that follicle-ripening proceeds throughout pregnancy, and that ovulation is inhibited by the corpus luteum. It is possible, if the corpus luteum alone is removed or even if one ovary is excised during pregnancy, that the removal of this inhibitory influence may lead these ripening follicles to rupture so that a second corpus luteum is produced. Some cases can perhaps be explained along these lines, although there is no evidence available to confirm the suggestion. It should be remembered that the corpus luteum develops signs of retrogression relatively early in pregnancy, and it is more than probable that its nidatory influence is restricted to the first few weeks. On the other hand its persistence until the puerperium indicates that it continues to serve some purpose, and it may inhibit not only ovulation but also the uterine contractions caused by the oxytocic hormone of the posterior pituitary. Some experiments on this point were described by Dr. J. M. Robson at a meeting of the Edinburgh Obstetrical Society on Jan. 11th. Working with slips of rabbit uterus in vitro he distinguished three stages of pregnancy: in the first half neither oxytocin nor vasopressin caused any contraction; in the second stage vasopressin caused contraction while oxytocin did not; and in the third, or terminal, part of pregnancy the reaction to oxytocin returned and gradually increased until parturition. Similar experiments were performed on strips of human uterus removed at various stages of pregnancy. None was obtained earlier than three months, but at three to five months it was found that oxytocin had no effect while vasopressin caused contraction. Subsequently the muscle became steadily more sensitive to oxytocin, and the sensitiveness reached its climax (as in the rabbit) at parturition. It is possible, Dr. Robson thinks, that the corpus luteum secretes a specific hormone, the inhibitory hormone, which acts on the uterine muscle, and which is different from the progestational hormone which prepares the endometrium for the ovum. The actions of the corpus luteum, on endometrium and muscle alike, do not occur, he believes, unless sufficient quantities of œstrin are present, and for its action on muscle more œstrin is required than for its action on the endometrium.

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[4] Public Health Reports, U.S. Public Health Service, 1927, xlii., 99.

[5] Ibid., 1932, xlvii., 1815.

[1] Arch. Dis. Child., December, 1932, p. 327.

[2] Irish Jour. Med. Sci., August, 1932, p. 520.

[3] Ibid., p. 522.

DETERIORATION IN THE TROPICS

MOST of the speakers in the discussion reported on p. 302 had lived in the tropics, but most of them are now living in London. The verdict of men on the spot might have been less favourable to a tropical life, and in face of breakdown they might be disposed to lay more emphasis on faults of environment and less on faults of personality. For example, in the December issue of the *Malayan Medical Journal* Mr. Kenneth Black, professor of surgery at Singapore, writes with envious enthusiasm of the benefits of a temperate climate. Times, as he says, may change, and in another 1000 years the belt of optimum climate may have shifted to Egypt and Mesopotamia. Meanwhile, however, Europeans who leave England for the tropics must expect a physical and mental deterioration which occurs independently of the onslaughts of disease, and is observed even in countries, such as Malaya, where the incidence of tropical infections among Europeans is comparatively low. Evidence of such deterioration was collected by Dr. G. H. Garlick, who, in reporting on the Colonial Survey Station making a topographical survey of Johore, stated that the graph showing the area surveyed per white man per month rose steeply at the beginning, as the man became accustomed to his work, maintained a steady level until he had been working for two and a half years, and then showed an equally steady decline until he was relieved at the end of his third year. Mental deterioration cannot be demonstrated so neatly, but it is significant that out of the total number of European government officials sent home on sick leave from the Dutch East Indies, the numbers suffering from neuroses and psychoses during the past 12 years have averaged just over 50 per cent. Prof. Black falls into line with speakers at the Royal Society of Medicine when he wonders how far this high incidence of nervous disorder is due to lack of training for self-control. Missionaries rarely get "nerves," he says, and he goes on to quote a medical authority experienced in examining people from the tropics who said that he never found neuroses in those who were really keen on their work. At the same time he urges that in Malaya three years should be the maximum tour of service for white people if they wish to keep their efficiency, mental equilibrium, and alertness. The editor of the *Malayan Medical Journal* remarks in comment that "the pendulum of lay opinion appears to be swinging from the former unjust extreme of referring to certain tropical countries as deathtraps to the other no less erroneous extreme of now regarding the same parts as health resorts."

THE COLLEGE OF PHYSICIANS

THE Milroy lectures of the Royal College of Physicians of London will be given by Dr. Robert Cruickshank on Feb. 23rd and 28th and March 2nd, the subject being Pneumococcal Infections. The Goulstonian lectures will follow on March 7th, 9th, and 14th, when Dr. Charles Newman will speak on the Physiology of the Gall-bladder and its Functional Abnormalities. Dr. C. R. Box will deliver the Lumleian lectures, on Complications of the Specific Fevers, on March 16th, 21st, and 23rd, and Dr. E. A. Carmichael the Oliver-Sharpey lectures, on the Peripheral Pathway for Sensation, on May 2nd and 4th. Prof. E. Mellanby's Croonian lectures will be given on June 8th, 13th, and 15th, the subject being Nutrition and Disease—the Interaction of Clinical and Experimental Investigations. All these lectures are to be delivered at the College at 5 P.M. on Tuesdays and Thursdays, and members of the medical profession will be admitted on presentation of a card.

WE regret to announce the death on Feb. 6th of Dr. Alfred Eichholz, chief medical inspector of the Board of Education from 1919 to 1930 and a research officer of the Ministry of Health.

INDEX TO "THE LANCET," VOL. II., 1932

THE Index and Title-page to Vol. II., 1932, which was completed with the issue of Dec. 31st, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 7, Adam-street, Adelphi, London, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

UNIVERSITY OF OXFORD.—Dr. G. D. H. Carpenter has been appointed Hope professor of zoology as from the first day of Trinity Term, 1933.

SPECIAL ARTICLES

OPEN-AIR COUNTRY HOSPITALS FOR CHILDREN *

By Sir Henry Gauvain, M.D., M.Chir. Camb., F.R.C.S. Eng.

MEDICAL SUPERINTENDENT, THE MORLAND CLINICS, ALTON, AND LORD MAYOR TRELOAR CRIPPLES' HOSPITALS, ALTON AND HAYLING ISLAND

In modern life no feature, perhaps, is more striking than the almost universal acceptance of the value of open air and sunshine. The importance of these agents having been recognised in the treatment and prevention of disease, they are being increasingly utilised by the population at large for the maintenance and improvement of health. It is no matter for surprise, therefore, that special hospitals for the treatment of children suffering from chronic disease should be established in increasing numbers, in suitable districts in the country and at the seaside, where patients may enjoy the benefits of fresh air and of all available sunshine. It must be confessed, however, that the advance in the design of such institutions leaves much to be desired; their inmates rarely find the fresh air they need combined with comfort and shelter, and as rarely are they able to take full advantage of the sunlight. Open-air hospitals are too often draughty and cheerless buildings, damp in wet weather, cold in cold weather, unduly hot in hot weather. Balcony accommodation is often woefully deficient and badly planned. Patients who should be kept immobile have to be wheeled to reach the sunshine through narrow doorways and round awkward corners. Unnecessary discomfort to the patients, useless labour for the nurses, needless damage to furniture and fabric—those are the drawbacks of many existing hospitals.

The Ideal Open-air Ward

The ideal open-air ward should be so constructed that when completely closed it still has perfect ventilation, and when completely opened its ceiling is the sky and its walls the horizon. There must be abundance of open air but freedom from draughts or excessive movement of air; there must be free access to sunlight and yet adequate provision of shade, for in sun treatment darkness is, in my opinion, as essential as light, and excess of sunlight may be even more harmful that its lack. Warmth and comfort should be ensured, for who needs them more than a sick person, and why should a patient be deprived of what reasonable foresight can procure? Wards should be so planned that all the inmates are under constant responsible supervision; every child needs that, and none more than a sick child.

Why should we be unduly concerned with the distance between beds when not only the air in the ward, but the whole air of the countryside is at our disposal? The freest possible access of air is obtained by providing wards with walls which can be folded back at will. In windless weather all the walls may be put aside. If it is not raining a sliding roof makes it possible to open the ward to the heavens and immediately the patient, without being moved, has access to all the sunshine there is. In most wards it is usual to arrange the beds about the walls, leaving the centre of the ward free, and this is convenient too for the open-air ward in which the centre portion, unoccupied by patients, has a fixed roof provided with a ventilating louvre under which the outer portions of the roof may slide. These outer portions are made of wired vita-glass, which transmits ultra-violet radiation when the roof is lowered. The sliding roof is counterbalanced by weights, so that the only effort required in raising it is to overcome friction, and even this can be dispensed with by attaching a small water-tank to the counterweights, when the roof may be raised or lowered by simply turning a tap. Below this sliding roof are canvas blinds which may be raised or lowered to exclude sunlight or moonlight when desired. Curtains can be drawn across the folding-glass walls as required and the ward thus completely darkened. The permanent walls reach just above the level of the beds and in their lower sections are rain-excluding flap ventilators which may be open or closed as needed. Thus, in very inclement weather, when full protection is required, the sliding roofs and the folding walls may be closed, good ventilation still being obtained through the flaps; the air enters the ward at floor level, and passes out through the central louvre.

AN EXAMPLE AT BRAMSHOTT

In such a ward, it will be seen, all weather conditions are provided for. One such erected on my suggestion at King George's Sanatorium for Sailors, Bramshott, some years ago has been in constant use summer and winter, in rain, hail, and snow, and has no balcony accommodation, for no balcony is needed. The patients have complete access to open air and to sunlight without their beds ever being moved. The ward is cooler in summer and warmer in winter than other parts of the institution. Heating is desirable for such wards in this country, if only to exclude damp. At Bramshott it is obtained by the use of anthracite stoves, which are clean, economical, readily adjusted, and only require fueling once daily. The patients, adult and often heavy men, obtain all the light and air they need without labour on the part of the staff, without discomfort to themselves, and without damage to hospital property. It remains, in my opinion, the most perfect open-air ward hitherto erected; but it could be improved by having two sliding roofs, one of asbestos or copper to exclude light and afford additional protection, and the other of wired vita-glass. Such a ward represents the ideal for this climate; it is, however, so revolutionary in conception and so foreign to our notions of a hospital, as to be viewed with suspicion by both architects and governors. Nor does it lend itself readily to architectural display or give the impression of permanent durability. Nevertheless, the experience gained at Bramshott shows the design to be practical and efficient. Many variations to this plan may easily be devised. Thus the fixed wall from bed level to the ground may be dispensed with, the folding walls reaching from ground level to any convenient height and above that, rain-excluding, centrally fixed windows provided. The sliding roof may be duplicated, either the external or internal being of wired vita-glass, the other of asbestos for lightness, or of copper on wood for durability. As an alternative the roof may slide in sections laterally, but the type already described will probably prove the most practical, useful, simple, and economical.

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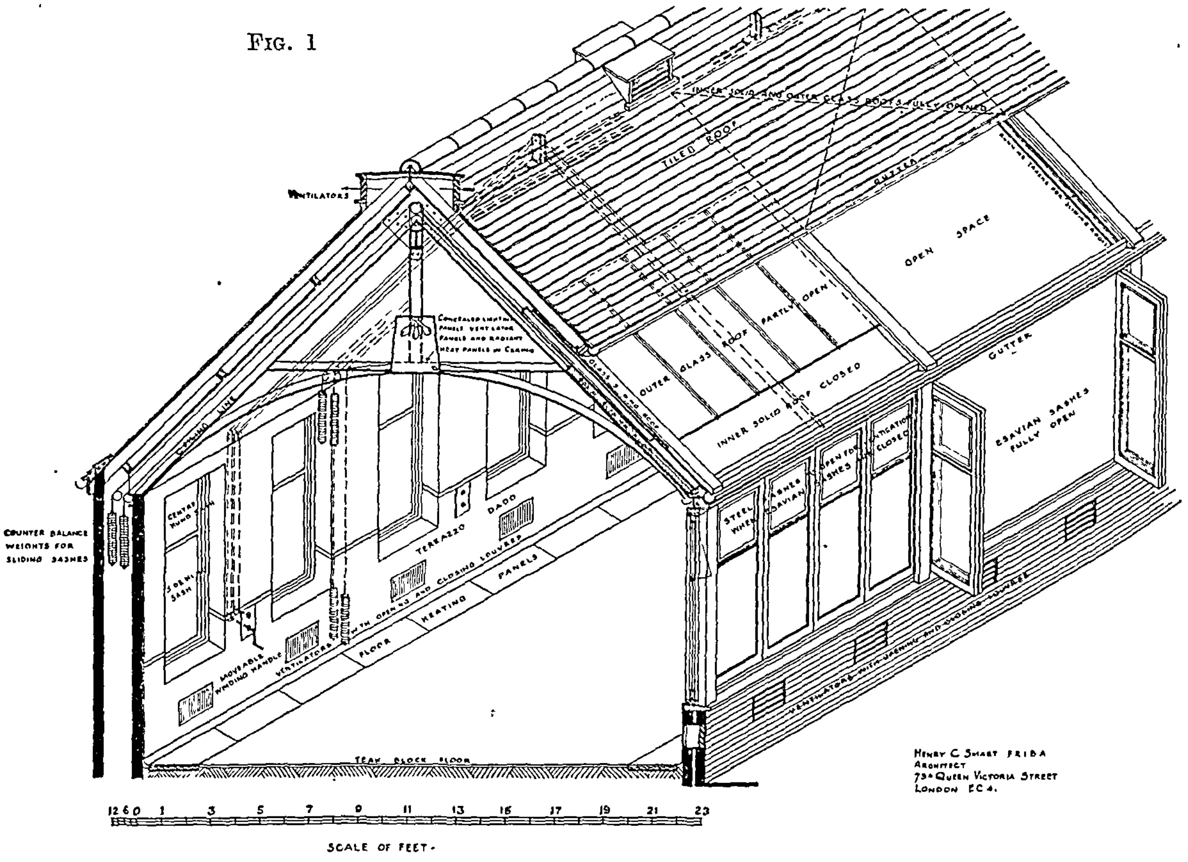
* Based on a presidential address to the Section for the Study of Disease in Children of the Royal Society of Medicine.

The idea of these open-air wards evolved from the employment of specially designed balconies with sliding roofs constructed at the Morland Clinics. One such balcony has already been illustrated in The Lancet.[1] They have amply justified their value, are much appreciated by the patients using them, are labour-saving and therefore popular with the staff, and have proved very economical in avoiding damage to hospital walls and furniture, which is inevitable when patients have to be wheeled from ward to balcony. Patients occupy these balconies day and night all the year round, undoubtedly to the advantage of their health. The danger of infection of all kinds is reduced to a minimum, basal metabolism is raised, appetite rapidly increases, recovery is hastened, and without question from every point of view they are advantageous to the patient, who literally lives in the open air but is sheltered from the weather as may be required.

Fig. 1


Ventilators
Inner solid and outer glass roofs fully opened
Tiled roof
Gutter
Open space
Concealed lighting panels ventilator panels and radiant heat panels in ceiling
Ceiling line
Glass and roof
Outer glass roof partly open
Inner solid roof closed
Gutter
Esavian sashes fully open
Steel sashes when Esavian sashes closed
Open for ventilation
Counter balance weights for sliding sashes
Centre hung sash
Sash
Dado
Terrazzo
Movable winding handle
Ventilators with opening and closing louvres
Floor heating panels
Ventilators with opening and closing louvres
Teak block floor
Henry C. Smart F.R.I.B.A.
Architect
73a Queen Victoria Street
London E.C.4.
12 6 0 1 3 5 7 9 11 13 15 17 19 21 23
Scale of feet.

Diagrammatic section of an open-air ward.

The Treloar Hospital

In planning an open-air hospital one has not only to think of the ward, but of the general lay-out and of the accessories indispensable for the work. At the Treloar Hospital, while the open-air ward just described was not adopted in the final plan, the wards approach very closely to that ideal; they combine permanent structure and successful architectural treatment with maximum convenience and efficiency, as well as the maximum of open air and light. The wards are single-storeyed for convenience in dealing with crippled and mostly recumbent children, as well as for safety in case of fire. The lay-out is on clean and straight lines, a great advantage from the engineering side, for bends and curves in pipes encourage furring and increase the power required for distributing the water. Sewerage is simplified. Pipes and cables are conveyed in a large main trench, which is a subway under the cloisters behind the wards, readily accessible in case of breakdown.

The hospital consists of five similar ward units of 60 beds each. Experience has shown us that with the type of case treated one fully trained sister is able to supervise such a unit with the assistance of probationer nurses. The Board of Education has laid down that 30 such patients may be taught by one teacher, and in order to earn most economically the educational grant for a hospital school the ward unit is divided into two similar parts, each half consisting of one large ward of 24 beds with its sanitary annexe, one small ward of four beds, and two cubicles. The small ward and cubicles are desirable for patients who are very ill, or who for some reason have to be nursed apart from the others or under different conditions. The cubicles are very useful for isolation, when a patient develops a complication such as a rash, the nature of which is in doubt, or for septic cases, which it is desirable to keep apart. This small ward with adjacent cubicles has its own sanitary annexe. Nevertheless, there is ready access to the main ward for educational purposes and for convenience in supervision and nursing.

THE WARD UNIT

In the centre of the ward unit is the sister's office, which may be regarded as the pivot of the whole.

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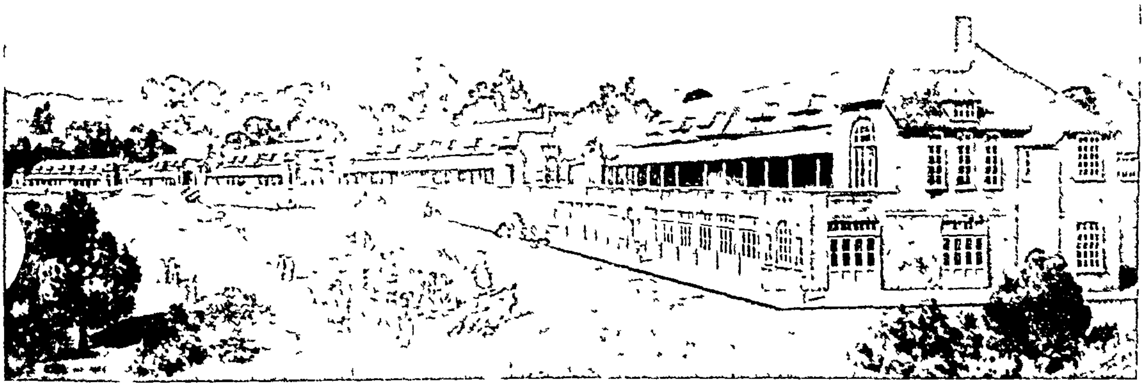
[1] The Lancet, 1927, i., 755.

FIG. 2



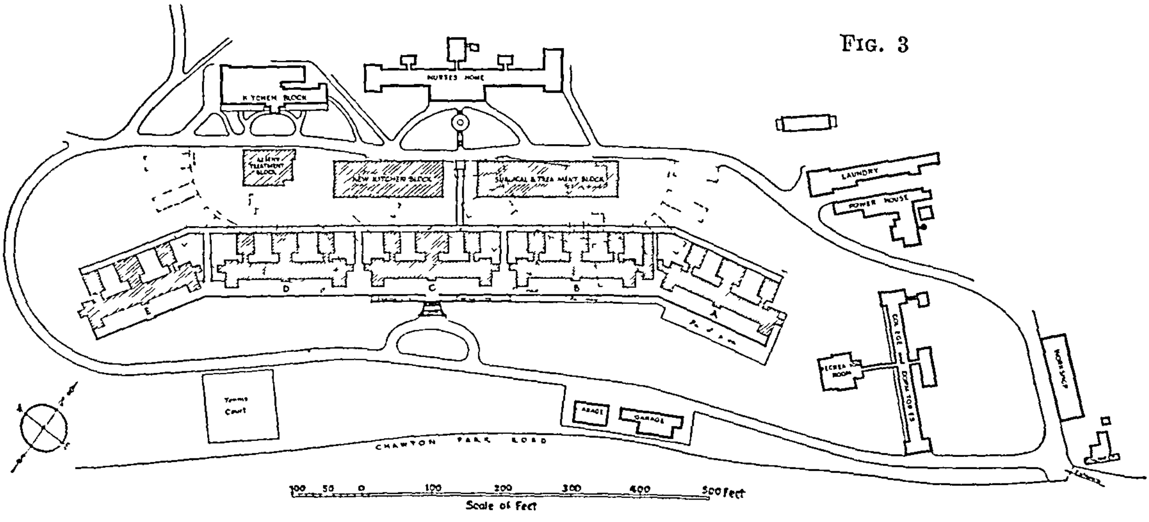
Perspective view of the completed Treloar Cripples' Hospital at Alton.

From this she can see all the patients in each ward and on the terrace outside; she controls the lighting and is in direct telephonic communication with the hospital exchange. For ventilation the wards have folding doors with Esavian fittings on the whole of their southern aspect, as a rule kept open, but capable of being closed in very inclement weather. Above these doors are windows the whole length of the southern part of the ward; these may be opened by gearing, are rainproof, and with the windows on the other side of the ward afford perfect cross-ventilation when the folding doors are closed. The wards being lofty, their inmates have the most abundant supply of gently moving air with the minimum of draught, so that dormitory and ward infections have less chance of developing. For the sake of comfort each ward is provided with an open fireplace with tiled surround. The psychological effect of such a fire, especially on a dreary day, is great. The main heating of the ward is, however, by panels beneath a terrazzo surround, a method which has not yet given rise to any difficulty in application. There is no need for a child in an open-air hospital to suffer from cold, although access to cold air is desirable. By means of the panel heating dampness may be excluded, a matter of great importance to children with joint disease, many of whom are immobilised in bed for lengthy periods.

The walls to a height of 4 feet are covered with terrazzo, while the centre of the floor is composed of teak blocks. The whole side of the ward being open, the beds are pushed on to the balcony with the minimum of labour. At the junction of the ward floor with the terrace outside is a guttered grating to catch any rain which may be blown in, but there is no obstruction to the wheeling of beds—ward floor, terrace, and grating being on the same level. The wards are illuminated by concealed roof lights which may be increased or diminished at will, and are so placed as to cause no glare in the patients' eyes. Differentially heated electric mattresses were at one time provided for the patients but these have been given up. Instead, in cold weather, each patient has hot-water bottles, changed four-hourly, when they are placed in a steam-heated chamber to be warmed up. This procedure is not only labour-saving but prevents waste of hot water. The beds and spinal stands are provided with large wheels and are easily moved.

The terrace in front of the wards is 25 feet in width, and is provided with a vita-glass covered balcony for a width of 10 feet. The proximal half of

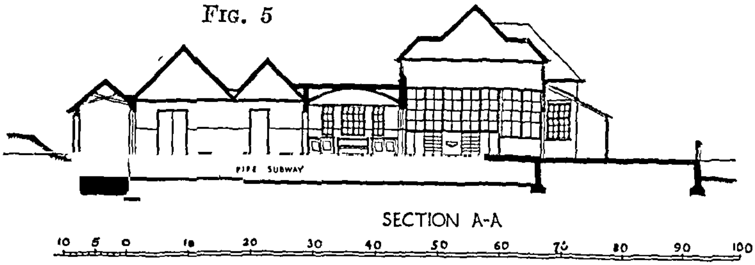
FIG. 3



Lay-out plan of the same. The dotted lines indicate the position of the wards in the original hospital.

the roof of this balcony is fixed to the wall, the distal half being a sliding roof of vita-glass, counterbalanced and so constructed, that by means of simple gearing it may be raised or lowered in sections at will. In fine weather this sliding roof is raised, in wet weather it is lowered; all patients therefore may be in the open air without danger of being disturbed by rain or snow. This terrace, approximately 1000 feet long, is paved with artificial stone blocks tinted green to avoid glare. It is readily accessible for every bed in the wards, and facing south-east, ensures the maximum of sunlight for the patients, combined with the maximum of protection. From the centre of the terrace are steps to the ground and a ramp on each side for the use of ambulant children who are crippled or need crutches.

FIG. 5



Section of the ward block.

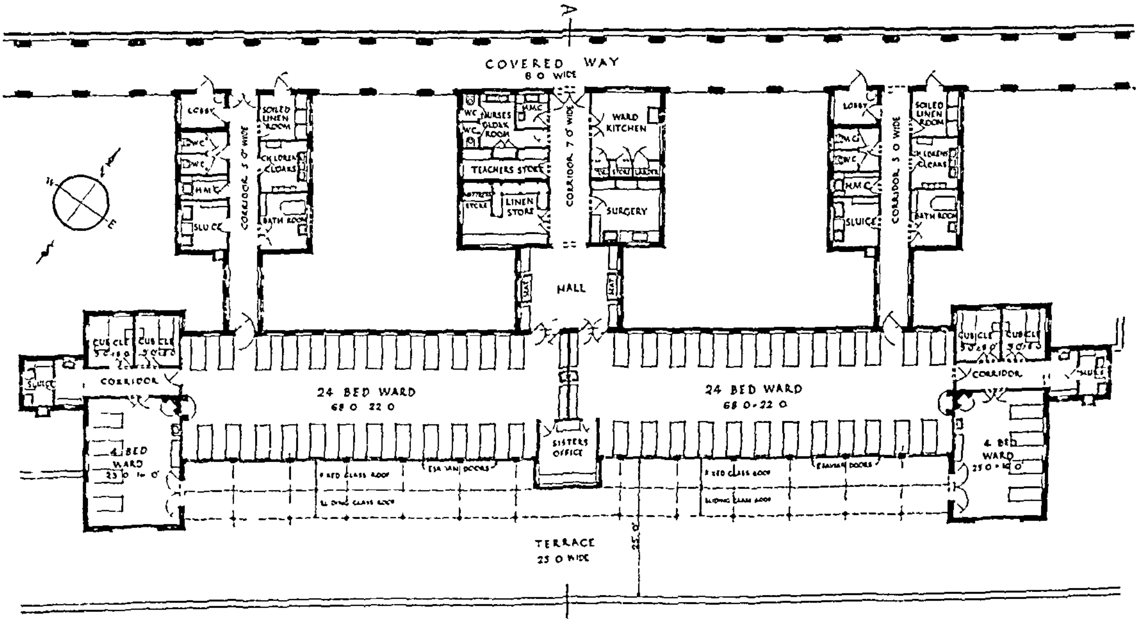
SANITARY ANNEXE

Each ward has its own sanitary annexe, comprising a sluice house, with hot-water rack for keeping bed-pans warm, and an appliance for sterilising them after use. There are separate lavatories, a room for ambulant children to wash in, a room for recumbent children to be washed in, with a special bath and special bath bed. At the north end of each annexe is a room for brushes, brooms, coal, &c., which may be brought from the cloisters behind the hospital without entering the ward at all. On the other side of the corridor is a room for soiled linen, which is collected in bins and removed via the cloisters. In the centre of each ward unit is a passage way from the cloisters leading to the main wards, with ward kitchen, surgery, housemaid's pantry, nurses' cloakroom, room for teacher's stock, and extra mattress, blanket, and linen rooms specially heated. The sister thus has her complete stock conveniently under control. The ward kitchen has, in addition to a hot plate, a small gas-stove and a steamer for sterilising crockery and cutlery after they have been washed. No child ever has any food presented to him on any utensil which has not been sterilised, and the danger of cross-infection is thus minimised. In the surgery there is a steamer for sterilising dressing bowls, &c., used in the wards. Dressings, gowns, and towels are sterilised in the central department. Attached to each patient's bed is a metal locker containing his own toilet requisites, so that danger of intermixing is excluded. Should any infectious disease arise, the patient is transferred at once to the isolation block which, in addition to small wards, has five separate cubicles approached by a passage way behind, but completely separate one from the other. Here observation is made easy by glass walls. The windows open completely and the south half of the roof is comprised of wired vita-glass on the sliding roof principle, so that even though suffering from infectious disease, the patient may enjoy the benefits of sunlight and fresh air without being moved from the cubicle. In inclement weather the windows are closed and the sliding roofs lowered, ventilation being ensured by flap ventilators.

OTHER DEPARTMENTS

Connecting the ward units behind is a long covered passage through which patients may be wheeled or carried under shelter to any department of the

FIG. 4



Ward block for 60 beds: plan.

hospital—actually they will be conveyed by electric trolley. A subway beneath these cloisters carries the heating, electricity, and gas for the ward units. The water for domestic purposes is softened, but hard drinking water is also laid on. In the centre of the hospital on the north side, and in ready access to the cloisters, there will be erected a treatment block, containing a fully equipped operating theatre with anæsthetic, sterilising, and surgeon's rooms, X ray department with fireproof room for storage of films, a studio for photographic work, plaster room with plaster store, massage and remedial exercise room, dressing rooms, dispensary, &c. On the floor above it is proposed to erect a surgical ward where patients may remain before and for a few days after operation. There will also be a special ward for sick staff, a lecture theatre, and a fully equipped laboratory. Owing to the nature of the ground there is a difference of 12 feet in level between east and west ends of the hospital. The extreme east block is therefore constructed in two storeys, the upper being a ward unit as described, and below it a dining-room with servery for ambulant patients, class-rooms, open-air and sheltered play-room, and hobby-room. These rooms will be separated by folding walls, and are so designed that in emergency they may be converted immediately into one large ward or one or more smaller wards, to provide temporary accommodation if at any time one of the regular ward units should need redecorating or repair. Should infectious disease occur in any of the regular wards, this section could be utilised while the unit is being disinfected. In fine weather the ambulant children will be taught on a specially designed terrace outside the class-rooms. Adjacent is a head teacher's room, teacher's common-room, and necessary annexes. Behind, on the same floor, is an exhibition room and the new light department with sister's office, and outside will be an outdoor light department designed for use in all weathers, and so constructed that the patients may have the freest access to cold air during treatment. Near-by are the orthopædic workshop and surgical carpenter's shop and stores. This lower floor may be conveniently reached from the wards and terrace above, either by one of the two ramps, suitable for trolleys or ambulant cripples, or even more readily by a staircase.

A Principle that Might be Extended

It may be reasonably argued that there is a wider issue than the application of these principles to open-air country hospitals for children. Has not the time come when, with an accurate knowledge of the value of open air and sunlight, such principles might be usefully applied to other types of hospitals, to residential institutions of all kinds, including schools and even to private houses? There is no doubt that living under such conditions many hospital patients would be restored to health more speedily, that the pupils in schools would be sturdier, healthier, happier, and less prone to infectious disease than at present, and that the community as a whole would benefit. In any case, it is certain that adequate, readily accessible balcony accommodation, with sliding roofs where possible, should be regarded as essential necessities in all modern hospitals and nursing homes.

I desire to acknowledge my indebtedness to Mr. H. Smart, F.R.I.B.A., the architect of the Lord Mayor Treloar Cripples' Hospital, who has kindly supplied the illustrations to this paper, and whose helpful advice and criticisms I have much appreciated.

THE L.C.C. HOSPITAL SERVICE

THE material collected in that portion of the annual report of the London County Council for 1931, which deals with the hospitals and general medical services under the control of the central public health committee, includes also a discussion on hospital management, an account of the salaries and emoluments of the staff, and a description of the London ambulance service.[1]

PATHOLOGICAL SERVICES

In an introduction, Sir Frederick Menzies refers to the development of pathological services, since experience has confirmed the conclusion that the absence of any organised laboratory system in the poor-law hospitals was not only unsatisfactory but also uneconomical The importance of facilities for personal coöperation between clinicians and pathologists is recognised. To this end the establishment of five group laboratories, with a separate histological laboratory, was decided on. Three of these are already in working order and are supplemented by hospital laboratories for examination of pathological material on the spot in eight hospitals. These hospital laboratories are staffed by women hospital laboratory technicians, specially trained for the purpose at the southern group laboratories; Dr. G. W. Goodhart reports that excellent work is being done by these technicians and that there is reason to believe that they are earning the confidence of medical officers.

Eighteen of the 28 general hospitals under the central public health committee are now provided with some degree of pathological facilities. With the gradual development of this service the necessity for having recourse to the services of external laboratories has progressively diminished.

The marked diminution in the number of patients treated for diphtheria is noted—the number of admissions being 7190, compared with 11,505 in the previous year. The amount of diphtheria antitoxin issued (236 million units) is the smallest annual issue made during the last seven years. Among the special investigations recorded is one on percutaneous immunisation against diphtheria by means of an ointment: the results indicate that with the material at present available this method of immunisation is not likely to be successful.

SPECIAL UNITS

Each hospital, prior to its transfer to the Council, served a definite district of London, and patients and their friends are inclined to resent any departure from the long-established usage of the guardians. One of the reasons for the passing of the Local Government Act, 1929, however, was to pool the hospital resources for the benefit of the metropolis generally, and experiments in re-allocation are being conducted in 11 of the boroughs. Steps were taken towards the establishment of special units in certain hospitals, in order to economise in medical nursing staff with special experience, and in special equipment; moreover the convenience of specialists or consultants is promoted by such concentration, and research work can be more easily undertaken.

The special units are to be as follows:—

Plastic surgery.—A unit established by the late Wandsworth Board of Guardians at St. James

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[1] L.C.C. Annual Report of the Council, 1931, vol. iv., Part 1. No. 2935. London: P. S. King and Son, Ltd., 1932, pp. 233, 2s. 6d.

Hospital, Balham, to which Sir Harold Gillies was attached as visiting surgeon, was transferred to Hammersmith Hospital in June, 1931, and has since been enlarged. Sir Harold is to serve as (honorary) chief surgeon, Mr. T. Pomfret Kilner, as surgeon, with assistant surgeons, anæsthetists, dentists, and a dental mechanic, a speech trainer, and a photographer-stenographer.

Radium therapy is concentrated at Lambeth Hospital under Dr. G. F. Stebbing; the work increased considerably during the year under review and will be described in another volume of the report.

Rheumatism.—In response to a request from the British Red Cross Society, it was decided to set aside a number of beds, not exceeding ten, for selected cases of subacute and chronic rheumatism under certain specified conditions. The patients thus admitted are subject to assessment of maintenance charges and are under the care of the medical superintendent of the hospital, though the staff of the Red Cross clinic are afforded facilities for research into and investigation of their conditions. The arrangement whereby 12 beds for children suffering from acute rheumatism were reserved at the St. Mary Abbot's Hospital has been terminated.

Thoracic surgery.—It was agreed that the intervention of a chest surgeon may be required for conditions which arise as part, or as complications, of subacute and chronic disease. It was, however, impossible to forecast the amount of surgery required and it was decided, as an initial step, to ensure that the services of a thoracic surgeon (unnamed) would be available for the general hospitals, but pending a year's experience no one hospital is being set apart for this work.

Thyroid diseases.—At the request of the Medical Research Council, who had found the lack of sufficient hospital beds to be seriously hampering research into the causes, manifestations, and treatment of Graves's disease, it was decided to provide a special unit of 10–12 beds at the New End Hospital. Dr. G. Scott Williamson and Dr. Innes H. Pearce are to be specially associated with the unit, to which patients suffering from myxœdema and from parenchymatous goitre and cysts may also be admitted.

Lupus, as a manifestation of tuberculosis, is in general dealt with under the Council's tuberculosis scheme. Adult patients requiring in-patient treatment as well as the application of Finsen light are accommodated at the Bow institution and go to the London Hospital for light treatment.

MENTAL PATIENTS

The gradual reorganisation of the mental units associated with the transferred hospitals has been decided on, since the arrangements for classification and segregation were found to be defective in the main; many of the units were somewhat gloomy and ill-equipped; and only two had mental consultants attached. Large observation blocks have been established at Bow to serve the eastern districts and at Constance-road institution to serve the southern districts. By permission of the Mental Hospitals' Committee, nine medical superintendents or deputy medical superintendents, have been appointed to act as consultants to existing units, which they visit once every week. Psychiatric social workers are attached respectively to St. John's and St. Peter's Hospitals, and their work is being much praised. Out-patient clinics, staffed from the Maudsley Hospital, are established in four hospitals in the north, east, and west of London, while patients from south London are seen in the out-patient department of the Maudsley Hospital. These clinics are used as consulting centres by general hospitals not visited by mental consultants, and also for cases of neurosis, psychoneurosis, and early mental disease in which district medical officers or public assistance committees desire an opinion.

VENEREAL DISEASE

Patients will in future be concentrated in nine units, four for men and five for women, in which some 270 beds will be available; all these units are now fully equipped for diagnosis and treatment. The important task of coördinating the venereal disease work in the municipal hospitals with that carried out at the voluntary hospital clinics will be greatly facilitated by the appointment of Mr. Anwyl Davies as general consultant in venereal disease to the Council's hospitals. It will now be possible for the first time to ensure a uniform standard of treatment and of record-keeping.

PATIENTS' DIETARIES

Nine scales of dietary have been prepared to meet the needs of various categories of patients. Prof. S. J. Cowell and Dr. Donald Paterson have given advice on the nutritional value of the diets prescribed, which are here tabulated. The dietaries are supplemented by fresh fruit, and medical officers have full power to add extra foodstuffs or vary them according to individual requirements.

TRAINEE SCHEME

In the part of the report devoted to special hospitals, one of the most interesting sections is that describing the initiation of training centres for tuberculosis nurses and domestic servants among ex-patients at King George V. Sanatorium and at Pinewood Sanatorium. These institutions were chosen because there is little stair climbing or heavy nursing work to be done, and no children—who might be susceptible to infection—are admitted. Candidates for training must be in a quiescent stage of the disease and serve for a preliminary period of six months or more at half-pay rates, being subsequently appointed on probation to the permanent staff. For purposes of establishment three trainees are regarded as the equivalent of two healthy members of the staff. Since the inauguration of the scheme 29 women have been accepted as trainees, breakdown demanding renewed sanatorium treatment occurring only in four cases. The sickness-rate among the rest is little, if any, greater than that among the healthy staff.

AMBULANCE SERVICE

At the end of 1931 186 ambulances and omnibuses were in service, the staff (excluding ambulance nurses and mechanical staff) numbering 404. The total number of calls in 1931 was 43,746, of which 11,226 were dealt with by the two double stations at Bloomsbury and at the Elephant and Castle. The average time to reach cases in the year was 6·5 minutes, the quickest average time since the inauguration of the service, while the average time elapsing between the receipt of calls and arrival at hospitals was only 13·6 minutes. Such swift transport certainly justifies the provision at hospitals of sufficient casualty officers to ensure that emergency cases receive expert attention without a moment's delay.

HEALTH AND DISEASE IN THE ARMY

THE "epidemic constitution" of 1931 is thought to have favoured influenza and cerebro-spinal fever, and the director-general's annual report[1] shows that there were 88 cases of the latter infection, 39 of them (with 10 deaths) at Aldershot. There was no evidence of case-to-case spread. It is suggested that the disease is essentially a nasopharyngitis, invasion of the blood and meninges occurring as a complication. In one case of meningococcal septicæmia without localising symptoms the fever lasted four months, during which the organism was easily recovered from the blood.

Diphtheria cases were reduced by a third during the year; immunisation is now given without Schick-testing. Enteric fever is less common, and there were only three cases in China. In India 80 per cent. of the cases of enteric are now diagnosed by blood culture; of a total of 183, all but 30 were sporadic and unrelated to other military cases. It is claimed that about 98 per cent. of the troops are protected. One patient at Aldershot had not been inoculated. Malaria was slightly reduced and the number of deaths was halved. Plasmoquine reduces the time under treatment, and Atebrin is said to cure both forms of tertian infection. Quinine prophylaxis was tried in China but was not approved, and mosquito repellents were used by troops in special employment at Hong-Kong in August and September, when one case only developed among 1000 men. Little is said of mosquito-proofing of barracks, probably because it is now accepted. The villages near barracks are being swept into the ambit of antimalarial measures, and a weekly day of empty tanks, in which to destroy larvæ, is specially advocated. Pneumonia is the disease causing most deaths; its small increase is attributed to the prevalence of influenza. Pulmonary tubercle has slightly increased, also amongst soldiers' wives. The liability increases after ten years' service and over the age of 30. The heaviest incidence is generally on the Eastern District (which includes London), and is always less in India than at home, perhaps because of the greater age of men on home service. Conditions of housing and food have been steadily improving in India since the war, but the case-incidence remains much the same, though it has lessened in the last two years. Cases of "pyrexia of uncertain origin" are increased, and it is suggested that unwillingness to accept this diagnosis is "tantamount to assuming that every species of tropical fever has been already sorted out from its fellows and duly labelled." Venereal diseases caused fewer admissions and less loss of service this year. The striking reductions since 1913 at the large stations is well brought out.

The equipment of operating theatres is being steadily improved, making surgical operations easier and safer, and this applies to families' hospitals in which (at home and abroad, but not in India) 1849 confinements took place with only two deaths. X ray equipment is also much better, while massage and electrotherapeutic sections are said to have secured a marked saving of days in hospital.

A committee has decided that a separate suitable uniform must be provided for war and manœuvres "as for other active games," and that the soldier's load should not exceed a third of his weight, otherwise, in action, he throws away some of his important equipment or reaches his objective unfit to fight. It is mentioned that four-footed beasts of burden are better shaped for weight-carrying than is the soldier, yet that they carry proportionately less; the elephant, weighing 3½ tons, carries a seventh of his weight; the camel, weighing half a ton, and the mule weighing 700 lb., carry only a quarter of their weight.

The object of physical training is said to be mental and physical alertness and agility with symmetrical development, and it is noteworthy that whereas in 1930 there were 61 invalids with disordered action of the heart, there were only 19 in 1931. "The fitter the man the slower the pulse" is found on examination to have support, and it is noted that among long-distance runners there are more non-smokers in the first than in the last ten after three miles across country.

Dental repair conserved 3·25 teeth per man this year (3·16 in 1930), and it is rare now for a man to refuse treatment; if he does, he is apt to return and take it later. Recruits are now examined more minutely with better light, so invaliding for ear disease has fallen from 214 to 153, though it is still the chief cause for rejection at entry.

PARIS

(FROM OUR OWN CORRESPONDENT)

AN ACTION FOR DAMAGES

IT is amazing to what lengths some litigants will go when there is a prospect, however small, of extracting much hard cash out of a surgeon. On March 27th, 1929, according to the *Siècle Médical*, Dr. A. operated on Madame L. Two days earlier she had consulted him, on the advice of her medical attendant, for a small swelling in the right breast. The surgeon having diagnosed, it was alleged by the plaintiff, a benign tumour, recommended its removal by a small operation of no importance. He took the precaution of requesting the husband to be present in the hospital at the time of the operation. During it he came to the conclusion that the tumour was malignant. He then consulted the husband, who charged him to do what he thought was best. Accordingly, he amputated the breast without the patient's consent, and while she was still under the influence of the original anæsthetic. Fourteen months later the patient underwent a second operation, presumably for an extension of the disease, and death supervened in due course. The widower not only refused to pay the surgeon's fee of Fr.1860, 600 of which represented hospital charges and visits by the surgeon at the patient's home, but sued him for Fr.200,000 in damages. The plaintiff supported his claims by arguing that the defendant had not taken all the necessary measures to ascertain the true nature of the tumour before the operation. He should have warned the patient of the possibility of an extensive operation, and have made a histological examination of the tumour. It was pointed out for the defence that the differential diagnosis of benign and malignant tumours is the more difficult because a benign tumour may become malignant. Further, it was argued that the diagnosis in such a case cannot be definitely made without an exploratory incision. By his prompt action, the surgeon had not only reduced the chances of a recurrence of the disease, but had also saved the patient from the terrors of a second operation following on the heels of the first. In the opinion of the medical experts, whose evidence was taken in this case, the patient would have been exposed to a very real danger had the surgeon suspended the operation and let her entirely regain consciousness in order to solicit her opinion as to any further action. The plaintiff was condemned not only to pay the surgeon his bill of Fr.1860, but also Fr.10,000 in compensation for the losses incurred over this action. The surgeon was also authorised to publish extracts of this judgment in one Paris and one provincial journal.

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[1] The Health of the Army in 1931. Report by Lieut.-General Sir Harold Fawcus, director-general, Army Medical Services. London: H.M. Stationery Office. 1933. Pp. 158. 2s. 6d.

SITES OF CANCER

Prof. Léon Imbert, who is attached to the anti-cancer centre of Marseilles, has published in the *Presse Médicale* for Dec. 28th certain rather striking statistics covering the years 1929–31 and the first six months of 1932. During this period 1091 patients suffering from cancer were examined. As many as 333 suffered from cancer of the uterus, and as there were only 694 women in this material, it will be seen that approximately 50 per cent. of all the cases of cancer in women were of the uterus. With another 26 per cent. for cancer of the breast, malignant disease of these two organs was responsible for three-quarters of all the cancers in women. Big sex differences were observed in the case of malignant disease of the larynx, mouth, and lips. Among 48 patients suffering from cancer of the larynx, there was only one woman, and among 98 patients suffering from cancer of the buccal cavity, including the tongue, there were only five. Prof. Imbert associates this relative susceptibility of the male to cancer in this region with his indulgence in tobacco.

BERLIN

(FROM OUR OWN CORRESPONDENT)

FEE-SPLITTING

THE question of fee-splitting is discussed in an editorial article of the *Ärztliches Vereinsblatt*, the official organ of the Deutsche Aerztevereins-Bund. The editor states that the system, called in France dichotomy, is quite usual in certain countries; in others it occurs but is not generally accepted, whilst in some it is unknown and is regarded as unprofessional—for instance, in England and America. In Germany fee-splitting is still in its infancy, but the editor draws attention to the fact that some time ago certain advertisements appeared in medical journals in which partnerships or (as it was called) coöperation was offered between general practitioners and specialists, especially surgeons. These advertisements have almost entirely disappeared from the journals since their character has been recognised, but nevertheless offers of fee-splitting continue in other forms. The nuisance began during the late war, when many medical men were in the army, and locum tenents, sometimes of a lower professional standard, were appointed who required fee-splitting from the consultants in a manner then unknown in the profession. Since then the difficult financial position of many practitioners—and specialists likewise—has led to a slackening of professional standards; it is of course obvious that the difference between the somewhat small fee of the family attendant and the sum charged by the surgeon who is consulted is sometimes striking, and the editor is of the opinion that an adjustment should be made in favour of the former; but this should be done openly. If dichotomy were to become more common in Germany than it fortunately is now, people may begin to think that their medical attendants propose operations for the purpose of sharing the fee and not in the interest of the patient's health, and that only those consultants who are prepared to split fees are recommended.

BEE-STINGS AND RHEUMATISM

In popular medicine bee-stings have long been considered as a remedy for rheumatism, and as early as 1888 a Viennese practitioner, Dr. Terk, had his rheumatic patients regularly stung by bees. Dr. Wolff and Dr. Pollack have recently succeeded in isolating the toxin from the bees. It is very like saponin dissolved in formic acid, and they call it apicosan. It is free from albuminous substances, so that no danger of anaphylaxis can occur. By intracutaneous injections—subcutaneous injections being less efficacious—a wheal with a reddened halo like a bee-sting appears. First, 0·2 c.cm. is injected, and the amount is gradually increased to 1·0 by the 13th day. There are three strengths of apicosan on sale, of 1, 3, and 9 units, a unit being equal to the toxin discharged by one bee-sting. As part of the local reaction, general symptoms with increased pains and swelling of the joints sometimes appear. The cure is effective for about five weeks. No undesirable effects have hitherto been observed. The remedy has been applied in chronic and deforming arthritis, and in Bechterew's disease. The pains became less and the mobility increased in cases where other remedies had proved unsuccessful.

IDIOSYNCRASY TO COLD

Dr. Bernstein, of the dermatological clinic of the Düsseldorf Medical Academy, discusses the shock which is experienced by persons with an excessive sensitiveness to cold. The idiosyncrasy may appear in the form of urticaria, hæmoglobinuria, or asthma. Sometimes general anaphylactic symptoms, such as decrease of blood pressure and leucopenia develop. In very sensitive persons fainting fits with unconsciousness occur. Sometimes slight cold is sufficient to produce such symptoms. The sudden death of good swimmers shortly after they have entered cold water is due to an idiosyncrasy of this nature. As a test a piece of ice should be placed on the skin, when a local wheal is soon produced in a sensitive person.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdr. P. B. Egan is placed on retd. list with rank of Surg. Capt.

The following appointments are notified: Surg. Lt.-Comdr. R. W. Mussen to *President*.

Surg. Lt. E. J. Mockler to *Queen Elizabeth* (transfer of flag).

ROYAL ARMY MEDICAL CORPS

The undermentioned Lts. to be Capts.: R. L. Whittaker, J. G. Black, D. A. O. Wilson, T. R. J. P. Kerwick, A. N. B. Odbert, C. A. Levy (prov.), and S. W. K. Arundell.

ARMY DENTAL CORPS

G. M. Sinclair to be Lt. (on prob.).

TERRITORIAL ARMY

Lt.-Col. S. F. Linton, having attained the age limit, retires and retains his rank, with permission to wear the prescribed uniform.

Capt. D. O. Macdonald, from T.A. Res. of Off., to be Capt.

Lts. N. Harkness, F. H. Hollingshead, and R. E. Rees to be Capts.

INDIAN MEDICAL SERVICE

The undermentioned appts. are made: To be Capts. (on prob.): W. J. Moody and A. E. Kingston.

To be Lts. (on prob.): J. D. Murdoch, G. B. Thomas, A. T. Andreasen, J. M. Sclater, D. R. Tweedie, C. F. Garfit, J. W. Richmond, G. S. N. Hughes, and A. D. Barber.

Lt.-Col. J. F. Boyd retires.

THE DOCTOR'S DAY

"Come, tell me how you live," I cried,
"And what it is you do!"

XIV.—THE SHIP SURGEON

No doubt those of you who have travelled as passengers in a big liner at sea have observed in the dining room the ship's surgeon, resplendent in blue uniform, gilt buttons, and red and gold stripes on his sleeves or shoulders, presiding at one of the tables and apparently being vastly amusing to or being amused by the bevy of fair ladies on either side of him. Perhaps you may have noticed him, too, standing at the head of the gangway as the ship is anchoring in some port, awaiting the arrival alongside the ship of the port quarantine officials. Perhaps also you may have seen him going round the ship at 10.30 in the morning, poking his head into various dark holes and corners, or seen him at 10.30 at night sitting in one of those same corners in confidential chat with a passenger. All these sights may have made you think what a pleasant life it must be to be a ship's doctor; how jolly and interesting it must be to meet fresh people every week or two and to see most of the world at no expense; what a care-free existence he appears to have and how easily he earns his pay. Probably, being on a holiday and not wanting to hear anything of medical matters for the time being, you have not troubled to make his acquaintance. So you have left the ship at the end of the voyage with, perhaps, a feeling of envy for one who appears to have a very easy professional life. The ship surgeon has his working hours, however, just the same as any medical man ashore has. How does the surgeon of a big passenger liner spend his days?

THE MORNING

My work of yesterday may be taken as a fair sample. My cabin steward called me at 7.20. Then came a good soak in a hot salt water bath, followed by breakfast at 8 o'clock and a walk on the boat deck for 40 minutes or so. At 9 I went down to the ship's dispensary.

The dispensary is a good-sized room; its walls are lined with racks, drawers, and cupboards in which are stowed our very comprehensive stock of drugs, dressings, and instruments, and it contains also an operating table, a dental chair, steam and electric sterilisers, and a writing desk. Here I met the dispenser and the hospital nurse, and here I was kept busy till about 9.40 seeing various members of the crew on the attending list—three pantrymen with cut fingers, two engine-room hands with small scalds, a couple of stewards with sore-throats and a cough, a bell-boy who wants a tooth out, and a quarter-master who wants his pension papers signed. One of the stewards who has a temperature is put into the hospital. Then the third-class passengers come in with various small complaints—a mother whose baby is vomiting its milk, two girls who require a laxative, a woman who, following the excitement and fatigue of packing and joining the ship, has missed her period and is rather anxious about it, and a man who wants me to visit his wife who is laid up in their cabin. It is all rather like the out-patient department of any hospital ashore.

Then comes the "round of the wards." In the ship I am in there are four hospital cabins, all pleasant rooms, two of them being fitted with real beds for passengers and the other two with iron bunks for members of the crew; 15 beds in all. The dispensary and adjoining hospital cabins are situated along one side of the ship a little aft of amidships, for most ship designers have learnt (at long last) not to put the sick quarters at the very after end of the ship right over the propellers. I have an isolation hospital as well, on a raised deck all by itself. This has 5 cabins and 22 beds. So my total hospital accommodation amounts to 9 cabins and 37 beds—more than many a good-sized town hospital has. Sometimes they are all wanted, as when one gets an influenza epidemic abroad, but yesterday I had only 7 beds occupied.

The cases in the hospital were nothing very exciting clinically. In one ward I had a cabin steward with "housemaid's knee" from over-much kneeling at scrubbing and not using the padded mats supplied for the purpose; a deck sailor with a sore-throat and a temperature, and a waiter who had upset a pot of tea over his foot and got scalded. In the female passenger ward was an oldish woman with chronic rheumatism. With a slightly rolling ship the struggle up and down the somewhat steep stairs between her cabin and the dining room is rather risky for her. So I have put her into the hospital mostly for her convenience and safety. In the isolation hospital are a measles child and her mother, and also a mental patient being returned to his own country.

With these cases I am kept busy till 10.20. Ten minutes later, with the purser, the chief and second stewards, an engineer officer, an electrician, and the ship's bugler, I attend the captain on his usual daily majestic tour of inspection of the ship. This procession wastes half an hour of my time. At 11 A.M. the nurse joins me and we visit the sick woman in the third-class. It is a case of sea-sickness, for which I prescribe atropine and hyoscyamine. Then we go and see two ladies laid up in their cabins in the first-class. One is liverish, while the other has that tiresome complaint to treat, insomnia. Then comes an emergency call to the dispensary where the nurse and I find a third-class passenger boy who has fallen and cut his head rather badly. This requires five stitches, and also entails the filling in, on my part, of a somewhat lengthy document called an "injury form." This document ultimately reaches the shipping company's lawyers, providing them with the main facts of the case should there be a claim for compensation.

Between 11.30 and 12.15 is my time for seeing first- and second-class passengers in my consulting-room. This is a roomy and nicely furnished apartment adjoining and communicating with my own private cabin. On an average two or three patients turn up there, but yesterday there were five. One lady came to see if I could supply her with two strips of calico for lengthening the sleeves of her husband's dress shirt! Calico supplied. At 12.30 the nurse arrives to say that she believes there is another case of measles in the third-class. A visit there confirms her diagnosis, and the case is ordered to the isolation hospital. A few minutes after 1 o'clock I go down to my table in the dining-room. There I have as table mates a professor of music, an archæologist, a manufacturer of wallpaper, a well-known author, a house-heating engineer, and an American school teacher on a year's leave from her school and on her first trip abroad. She is insatiable in her thirst for information.

Between the lot of them what questions I have to answer! "Do seals travel alone?" "What is the average weight of a seagull?" The wallpaper manufacturer, remembering his very first sea voyage, inquires "What was the name of the chief engineer of the *Persia* in 1908?" The teacher, anxious about getting a draft cashed, asks "How many years has the First National Bank of Boston had a branch office in London?" and also "What is the weather in England going to be like when we get there?" Although to answer all the questions that are put to me would tax the knowledge of the combined contributors to the "Encyclopædia Britannica," it is all good fun and we are all "as thick as thieves."

THE AFTERNOON

At 2.30 I attend at the dispensary again to vaccinate some members of the crew—a matter I had postponed during the hot weather and more busy portion of the voyage. From 3 to 4 o'clock I found myself unoccupied clinically. I fill in that time bringing up to date my medical journal, a somewhat ponderous volume, containing names and brief details of all cases treated on the voyage and destined ultimately for my medical superintendent's information. Also during that time I receive a visit from the secretary of the passengers' entertainment committee asking if I can supply him with a selection of odorous drugs for a smelling competition. From 4 to 4.30 is my afternoon passenger consulting time. Yesterday this was enlivened by a visit from a little old lady who pathetically asked me to aid her in searching the ship for her lost lover! They had quarrelled some 40 years ago, and she has been searching the world for him ever since. Harmless and apparently sane except on this one point. At 4.30 I attend again at the dispensary to see any members of the crew. Here one old "salt" comes along to say that he is beginning to feel the colder weather and fears a return of his old malaria. His doctor at home has advised him to take a couple of bottles of beer a day for this, and could I order . . . ? However, nothing doing. At 4.45 the third-class passengers attend again, one this time with alleged "potoman" poisoning, and after that I make the afternoon round of the wards. Perhaps after that the nurse and I visit a passenger cabin or two, but generally from 5.30 to 6.30 I am free.

Then a quarter of an hour is occupied scrambling into my mess uniform—an Eton jacket affair—before welcoming to my private cabin sundry passenger acquaintances and entertaining them for half an hour or so, for the good of the Company, with a seductive cocktail or a little dark sherry. Then comes the function of the day—dinner—where our efforts to amuse and interest one another are exasperatingly spoilt by a blaring orchestra playing jazz. After dinner I have another short session in my passenger consulting-room, and at 9 the nurse and I pay our final visit to any sick people who may require to be seen in their cabins or in the hospital.

THE END OF THE DAY

Such is the daily routine, a day pretty well occupied in any case, and always liable to be made extra busy by such emergencies as a passenger "running amok" with delirium tremens and requiring restraint and a guard; the appearance of a small-pox case and the vaccination of all contacts; or an acute appendicitis which is a more anxious and troublesome affair afloat than ashore.

Anything can, and occasionally does, happen aboard ship—murder, attempted or actual suicide, childbirth, concealment of birth, any form of insanity, diabetic coma, uræmia, retention of urine, sleepy sickness, typhus, and, in the tropics, plague, dysentery, malaria, and all the rest of the tropical medley—and the ship surgeon must be prepared to deal, with a reasonable amount of competence, with any of them.

Finally, last night, at about 9.40, the wireless operator handed me a message from the captain of a passing cargo boat asking me for advice how to deal with an awkward emergency. I handed in my somewhat lengthy reply at about 10.30 and "called it a day." At 10.50 P.M., when tidying up my consulting-room desk prior to climbing into my narrow bunk, I came across a memorandum from the Company's head office: "The management expects the surgeon to assist the purser's staff in arranging for and in supervising the amusement of the passengers." At all events, I did supply the smells for the smelling competition to-day!

PANEL AND CONTRACT PRACTICE

Investigation by Reference

A CASE recently referred by the clerk of the London insurance committee to the medical benefit subcommittee, and dealt with under Clause 7 (3), is of general interest. In September, 1932, an insured person obtained treatment from the practitioner as a private patient, the fees paid amounting to £1 3*s.* 6*d.* A claim for a refund was put in, and the doctor was asked for his observations under Clause 7 (3). The practitioner, after being furnished at his request with a copy of the clause, described it as autocratic, and concluded his letter to the committee with the following sentence: "The remuneration received for the treatment of panel patients does not encourage me to give any more than very ordinary treatment." For writing this to the clerk of the committee—not for publishing it in a newspaper or stating it to his patients—this medical benefit subcommittee decided that his conduct to insured persons required investigation. They have no power to carry out such an investigation themselves, but can refer a matter for investigation to the medical service subcommittee. The effect of this procedure on the practitioner concerned is serious, for it implies publicity as well as worry, the medical service subcommittee having to report the case to the full committee. This factor is never considered by the lay members of these committees who pass these resolutions for "investigation by reference," as it is called. The trouble is that any person can write any sort of lie about a doctor to the clerk of the committee; he need not be a relative of the patient, he need not have been a witness of the action complained of, the patient need not even have sanctioned his interference. But once the accusation is brought to the notice of one of these committees—mostly composed of laymen—they order an investigation by reference, and then, no matter what the doctor has to say, the medical service subcommittee nearly always insists on a hearing to complete the investigation.

The regulation which sanctions this procedure requires amending. At present a practitioner is entitled to charge an insured person if he fails on demand to produce his medical card whilst stating he is an insured person; but the practitioner must give an official receipt on Form R 52, which enables the insured person to be repaid if he is really entitled to medical benefit. The insurance committee then repay the insured person out of the money that they would normally pay that doctor, but the patient becomes one of that doctor's panel patients. Frequently, however, insured persons, intentionally or otherwise, omit to say they are insured at all, and they then receive an account in the ordinary way—a private bill—from the doctor. If, within one month from the payment of fees or the receipt of bill, they write to the committee to say they are insured persons, the committee may (not must) order the doctor to refund the money. But the doctor is credited with the number of units which would be allowed to him had the patient been treated as a temporary *resident*—i.e., usually 6 units for the quarter instead of 1, which works out to a payment of something like 12*s.* or 13*s.* per case. The practitioner is asked for his observations before Clause 7 (3) is put into operation, and it was in his reply that the doctor in the case reported above made the remarks quoted. It would seem that reference by investigation should not be rashly ordered, and that more discretion should be given to the medical service subcommittee which receives these references to decide them without a hearing, if they so choose. Moreover, they should have discretion when the reporting of such a case to the full committee is concerned. A doctor who wins his case against charges brought against him should surely have some monetary compensation for worry and loss of time, apart from the subsistence allowance which is the only thing he can now claim.

It seems preposterous that a practitioner should be put to the trouble involved in defending his reputation before a medical service subcommittee because he criticises to the clerk of the committee the working of a clause of the regulations with which he was unfamiliar. There was no evidence that this doctor had ever treated a panel patient differently from a private patient.

Fees for Anæsthetics

The panel conference held last October decided that it was proper for any panel committee to determine whether a practitioner in its area administering anæsthetics for a colleague should be specially remunerated or not. The regulations at present require a fee to be paid out of the practitioners' fund for such special service, provided the panel committee is satisfied that the claim is reasonable. In some areas practitioners have agreed never to put in such claims; in some the panel committee discourages them. In other areas there has been an increase in their number, in London to such an extent that the panel committee induced the insurance committee to agree to pay only a nominal fee of a shilling each—just to comply with regulations until the matter could be taken up with the Ministry. This shilling fee has never been agreed to by the Ministry and has therefore never been in force. The Insurance Acts Committee recently sent a deputation to the Ministry, when it was understood that the resolutions of the conference were not being received there with favour. It was felt that the public might think something was being taken from them that they now had, and it would be a difficult position for the Minister to explain in Parliament. London was specially asked to reconsider its resolution, and the matter will come again before the panel service subcommittee.

Continuity of Medical Benefit

The Insurance Acts Committee also gave consideration to the future of insured persons who go out of benefit as a result of being unemployed. There may be hundreds of thousands who thus come officially under the care of the public assistance medical service, but who through habit, or lack of knowledge that they are no longer eligible for insurance medical benefit, will still consult their usual medical adviser. Insurance doctors would then have many patients to attend for whom they were receiving no capitation fee, and they would be placed in a difficult position if they refused treatment on that account. If the Ministry of Health were to make the public assistance medical service open to all practitioners such unemployed patients could still have the doctor of their choice, who would then be paid by the public assistance committee and not out of health insurance funds.

Medical Certification Statistics in Scotland

The Department of Health for Scotland have devised a telling method of bringing out discrepancies in medical certification. Statistical tables of certification have been prepared for the two years 1930–31 and 1931–32, which include: a classified list of counties and burghs, giving for each insurance area the total numbers insured, the total number of first certificates issued, the incapacities begun and ended during the year, the total duration of incapacities, the average duration in days, the days of illness per 1000 on the lists, and the first certificates issued per 1000 on the lists. This elaborate set of facts is set forth in groups for industrial counties; other counties, including the Highlands and Islands; and the burghs. A further table shows the total number of insured persons referred to the regional medical officer; the percentage of these who were declared not incapable; and how many did not appear at the examination arranged for. In a covering circular Miss Muriel Ritson, comptroller of insurance, says that in nearly every area certain practitioners have issued certificates to a considerably larger proportion of their patients, and/or have continued to certify incapacity over longer periods, than have their colleagues. In many of these cases, she adds, the certification of the practitioner concerned presented the same features in both years under review. Moreover, a considerable number of cases referred to the regional medical officers come from the same practices, and in a high proportion of the references the practitioner's certification is not confirmed.

For Scotland as a whole the number certified by the regional medical officers as not incapable of work was more than 40 per cent. of the persons referred. The average duration of the certified illnesses in 1931–32 was 25·83 days, a slight reduction on 1930–31. This does not include chronic illnesses whose duration extends beyond the period under review. But this reduction masks the fact that the increase of certification and consequently in benefit expenditure began in Scotland early in 1932. There is a much heavier increase in the third quarter of 1932 compared with the same quarter in 1931.

The covering circular suggests that instead of full certification, more use should be made of the space provided on the certificate for "remarks"—e.g., on the probable duration of incapacity or the necessity for further examinations. The circular is directed to each practitioner, who can now learn the average certification in his area and discover whether he is above or below that average. At the same time, committees are requested to study the tables and to make a detailed investigation when the percentage of certification in any one practice seems unduly high.

Apart from the immediate administrative purpose, the tables now issued are a good index of the effectiveness of the panel system.

In the remote Highlands and Islands, for example, the average duration of illness is 31·9, and the first certificates per 1000 on the list are 121: in the Lowland counties the corresponding figures are 23·8 and 176: in the large cities they are 27·0 and 197; in the medium burghs 26·1 and 196; in the small burghs 27·0 and 188. The percentage of doctor's total list referred is: for the counties, 2·33; for the burghs, 2·98; for Scotland as a whole, 2·71. The numbers declared by the regional medical officers not incapable were for the counties 19·4 per cent., but 23·7 per cent. failed to appear. There is thus a total of 43·1 per cent. declared not incapable. The corresponding figures for the burghs are 20·3, 21·5, and 41·8. The fact that such a large percentage of referred persons should fail to appear at the clinic either because they had in the meanwhile been certified by the doctor or had themselves expected rejection and did not appear is disconcertingly large.

The circular directs special attention to the National Health Insurance Act, 1932, involving reduction in money benefits and cessation of medical benefit. It also contains details as to the rates of sickness among women. The rise in expenditure in Scotland in the year 1932, up to Sept. 30th, the latest returns available, has apparently no parallel in England and Wales. It is stated that the department have been unable to ascribe to any medical cause the rise in expenditure in Scotland which threatens to counteract the satisfactory results of the year 1931.

PUBLIC HEALTH SERVICES

Immunisation against Diphtheria

In a book reviewed in these columns a few months ago Dr. J. Graham Forbes[1] gave a very full account of the epidemiology of diphtheria and made a survey, which was almost world-wide, of the progress of preventive inoculation up to the end of 1930. He has now[2] ascertained the further trend of diphtheria prevalence and prevention in many countries and has been able to include information as recent, in some instances, as last July.

From 1928 to 1930 diphtheria was pandemic in Europe. Its prevalence reached a peak in the latter year in most European countries, including the British Isles, and in 1931, except in parts of central and eastern Europe, the incidence and mortality fell markedly. In Australia, on the contrary, a phase of low incidence and mortality of some years' duration was ended in 1931–32 by increased prevalence. Neither the years of low incidence in Australia nor the sudden fall in prevalence in Europe can be credited to immunisation but to the ordinary periodicity of the disease. In Australia, until recently, very little immunisation has been done, though the confidence which was shaken by the Bundaberg disaster has now been largely restored. In Europe the decline has occurred in countries where prophylaxis has not been carried out upon any significant scale as well as in those, notably France, where the numbers immunised have been very large.

Over the greater part of the United States of America incidence and mortality have shown a continuous fall during the past five years. Forbes points out that in New York City and State particularly, diphtheria preventive work has been carried out upon an ever-increasing scale and under the most favourable conditions for the last 14 or 15 years, with the result, in his opinion, that prevalence has been definitely checked amongst a number of communities ranging in size from New York, with its 7 millions, downwards. Coincident with the increase of preventive inoculation during 1929–32 there has been a decline in prevalence "amounting to 25 per cent. in one year and 50 per cent. in the last two years. Compared with the 1911 record the fall is 84 per cent." The progressive increase of prophylaxis in Canada has produced comparable results in many of its important cities. In America and Canada these achievements have been made possible by organised and skilful propaganda.

THE PRE-SCHOOL CHILD

In France, although the educated classes have demanded immunisation, the opinion has been expressed by E. Lesné that unless compulsion is introduced, as it has already been for recruits proceeding to stations where the disease is prevalent, the necessary proportion of immunisations of the under-five group essential to affect prevalence will not be secured. In America and Canada this importance of immunising children of pre-school age has been fully recognised, and E. S. Godfrey, director of the New York State Health Service, has shown, for a number of cities, that even if 60 or 70 per cent. of the school population were protected there was no sensible decline in the attack rates until a "critical point or safety threshold" had been reached and maintained amongst the pre-school age-group. When the immunisation of "approximately one-third or more of those under 5 was superimposed on the numbers of school age already protected" a definite decline in the current prevalence of the disease became noticeable. It may be added that among children in this age-group reactions to the prophylactic antigen are minimal in incidence and severity.

Formol-toxoid, the anatoxin of Ramon, has either already superseded or is rapidly superseding the original toxin-antitoxin mixtures (T.A.T.). Toxoid is not only non-toxic but a more efficient immunising agent, especially if two or three weeks separate each of the three injections. Toxoid must be injected; inunctions of Loewenstein's toxoid ointment are definitely much inferior. Ramon is inclined to minimise the importance of reactions, but in this country at least reactions must so far as possible be avoided. Even among the pre-school group, protein-sensitive children, although uncommon, are to be found; in the higher age-groups they become increasingly numerous. Although a preliminary Schick test is always desirable it is not always feasible in clinic work, and even if it is done it is usually possible to take only one reading, a week later, by which time any pseudo-reactions, which indicate sensitiveness, have disappeared. Fortunately, sensitiveness to toxoid can be determined by the Maloney intradermal test,[3] the technique of which has lately been described again in Memo. 170/Med. of the Ministry of Health.

Using toxoid of the same potency as anatoxin, J. G. Fitzgerald and his associates[4] observed 16 per cent. of local reactions in 30,000 children and 10 per cent. of marked reactions between the ages of 5 and 14. In these cases they reduced the prophylactic doses of toxoid or omitted immunisation altogether. R. A. O'Brien and H. J. Parish,[5] using a potent unconcentrated toxoid, found that it was probably not more likely to cause reactions than a preparation like anatoxin which had a strength only one-half to one-third as great. Employing the Canadian toxoid test they were able rapidly to immunise a series of children without troublesome reactions, the non-reactors receiving this potent toxoid in full 1 c.cm. doses and the reactors toxoid-antitoxin floccules (T.A.F.), a preparation whose antigenic value is at least as high as that of anatoxin, but which rarely causes reactions even in adults.

Reactions, when they occur, although unpleasant, are harmless in the healthy. Ramon and Débre have stated (passim) that many thousands of injections of anatoxin have been made in tuberculous children at the Berck Hospital without untoward results. This is, of course, perfectly true, but, according to other observers, exceptions occur. In a recent paper E. Aubertin and P. Boudou[6] quote M. and G. Mozer as having observed activation of a focus in three children at Berck suffering from quiescent surgical tubercle, and Cruchet, Nové-Josserand, amongst others, as having reported similar activation in cases of pulmonary tuberculosis. The immunisation of tuberculous children, if these observations are well founded, is clearly not free from risk and should be avoided.

PROGRESS IN GREAT BRITAIN

In this country immunisation lags, except in a few bright spots like Edinburgh and Birmingham and its neighbouring towns, and some boroughs of Greater London—notably, Heston and Isleworth. The numbers so far immunised in several of our largest centres of population compare unfavourably with those which many an obscure town of central and eastern Europe can show, and can be expected to have no effect whatever upon prevalence. Forbes estimates that in Great Britain up to the end of 1930 a total of about 200,000 persons had been protected or were known to be Schick-negative, the proportion in Scotland being over three times greater than in England and Wales. In London, including Greater London, 43–44,000 were then known to be protected. In New York City the health commissioner, Dr. Shirley W. Wynne, recently reported that 166,000 children were immunised in 1932 alone. He is still concerned about the large number of young children who remain at risk, and appeals for a further extension of the work, particularly by private doctors. The Ministry of Health memorandum, already cited, in drawing attention to the advantages of immunisation, states that about 60,000 cases of diphtheria, with an average of approximately 3000 deaths, are notified annually in England and Wales.

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[1] THE LANCET, 1932, i., 517.
[2] Bull. of Hyg., 1932, vii., 669, 737.
[3] Amer. Jour. Pub. Health, 1927, xvii., 1027.
[4] Ibid., 1932, xxii., 25.
[5] THE LANCET, 1932, ii., 176.
[6] Paris Méd., Nov. 12th, 1932, p. 393.

Compulsion is out of the question in this country, and except for sporadic efforts by individual medical officers of health, frequently those of relatively small districts, propaganda is non-existent. Yet nothing is more certain than that well-devised and well-presented reasoned propaganda would meet, as it always has met wherever tried, with a ready response. The public is not really reactionary and stupid about the welfare of its children; but merely, in this matter of the prevention of diphtheria, almost completely uninstructed.

Influenza

In the week ending last Saturday (Feb. 4th) the number of deaths from influenza in the 118 great towns of England and Wales was 1911, compared with 681, 1041, 1589, and 1934 in the previous four weeks. In London the number was 368, compared with 93, 242, 338, and 370. The course of the epidemic in the several geographical regions of England and Wales is shown in Table I., taken from the Registrar-General's Weekly Return for the week ended Jan. 28th, from which it will be seen how sharp was the rise in death-rate in the eastern area of England and in Wales, regions which had remained immune for two or three weeks after the others were affected. The south-western area still has the best record.

TABLE I

—	118 great towns.	South-eastern area.	Greater London.	Northern area.	Midland area.	Eastern area.	South-western area.	Wales and Monmouthshire.
1932 Dec. 17th	0·22	0·17	0·17	0 26	0·27	0·21	—	0·15
„ 24th	0·30	0·13	0 17	0·35	0 69	0·10	0 23	0 23
„ 31st	0 77	0·39	0 31	0 76	1·95	0·10	0·23	0 38
1933 Jan. 7th	1·73	1·22	1·04	1 70	3·65	0 42	0·57	0·38
„ 14th	2·64	2·56	2·36	2·78	3·25	1·78	0·91	0·98
„ 21st	4·04	3·73	3·63	4·81	4·32	1·36	1·81	1·58
„ 28th	4 91	4·06	4·08	5 66	5·08	5 98	2·60	7·15

Figures for some of the principal towns of England and Wales will be found under the heading of Infectious Disease during the week ended Jan. 28th. In Scotland in the week ending last Saturday the decline was interrupted, and the 16 principal towns reported 98 deaths compared with 111, 88, and 84 in the previous three weeks. Small increases were noted in Glasgow, Edinburgh, and Dundee, where the totals were 19, 18, and 31 respectively.

TABLE II

—	Ages 0–25		25–45		45–65		65 +		Total deaths
	Deaths.	Per cent.	Deaths.	Per cent.	Deaths.	Per cent.	Deaths.	Per cent.	
1932 Dec. 17th	15	17·6	9	10·6	21	24·7	40	47·1	85
„ 24th	23	19·2	19	15·8	34	28·3	44	36·7	120
„ 31st	43	14·2	70	23·1	89	29·4	101	33·3	303
1933 Jan. 7th	75	11·0	143	21·0	214	31·4	249	36·6	681
„ 14th	112	10·8	196	18·8	336	32·3	397	38·1	1041
„ 21st	156	9·8	311	19·6	525	33·0	597	37·6	1589
„ 28th	164	8·5	338	17·5	649	33·5	783	40 5	1934

Table II., which sets out the age-distribution of deaths from influenza during the past seven weeks, shows that the proportion of deaths in the younger age-groups is still falling.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 28TH, 1933

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 14 (last week 16); scarlet fever, 1667 (last week 1965); diphtheria, 781; enteric fever, 12; acute pneumonia (primary or influenzal), 4821 (last three weeks 2816, 3456, and 3781); puerperal fever, 36; puerperal pyrexia, 156; cerebro-spinal fever, 66 (last two weeks 47 and 61); acute poliomyelitis, 12; encephalitis lethargica, 9; dysentery, 12; ophthalmia neonatorum, 61. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Jan. 31st–Feb. 1st was as follows:—Small-pox, 44 under treatment, 5 under observation (last week 40 and 4 respectively); scarlet fever, 1615; diphtheria, 1625; enteric fever, 7; measles, 263; whooping-cough, 637; puerperal fever, 24 (plus 8 babies); encephalitis lethargica, 229; poliomyelitis, 3; "other diseases," 347. At St. Margaret's Hospital there were 10 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 19 (0) from measles, 10 (5) from scarlet fever, 68 (13) from whooping-cough, 55 (14) from diphtheria, 55 (13) from diarrhœa and enteritis under 2 years, and 1934 (370) from influenza. The figures in parentheses are those for London itself.

The towns which reported the largest number of deaths from influenza were as follows, last week's figures being given in parentheses: Manchester 100 (106), Sheffield 85 (49), Stoke-on-Trent 72 (58), Bristol 65 (59), Leeds 56 (49), Liverpool 49 (52), Bolton 43 (29), Leicester 37 (16), Nottingham 37 (26), Cardiff 36 (3), Swansea 28 (6), Hull 27 (13), Birmingham 24 (38), Oldham 22 (12), St. Helens 22 (19), Stockport 22 (15), Rochdale 21 (12), Warrington 21 (7), Salford 20 (18), Wigan 20 (6), Middlesbrough 15 (21), Portsmouth 12 (25), Sunderland 11 (15). In Greater London the areas chiefly affected were: West Ham 24 (28), Croydon 22 (11), Leyton 14 (10), Ealing 13 (15), Tottenham 11 (13), Walthamstow 10 (11).

The deaths from enteric fever were reported from Acton and Stockport. Four fatal cases of measles were reported from Hull. Deaths from whooping-cough were widely distributed, each 4 being reported from West Ham, Leeds, St. Helens, and Salford; each 3 from Manchester and Sheffield. Diphtheria accounted for 6 deaths at Manchester, each 4 at East Ham and Leeds.

The number of stillbirths notified during the week was 266 (corresponding to a rate of 43 per 1000 total births), including 37 in London.

CORRESPONDENCE

THE ADMISSION OF WOMEN TO THE G.M.C.

To the Editor of THE LANCET

SIR,—The increased representation of general practitioners on the General Medical Council has encouraged us to make articulate a suggestion which has been whispered for a long time. Why should there not be a woman member of the Council?

The number of women on the Medical Register now reaches the respectable figure of 5391 out of a total of 55,932. This number would not justify a claim to separate representation, and such a proposal would in any case be contrary to the whole policy of the profession and is not what we have in mind. The proceedings of the Council show that the great majority of the matters which come before it concern practitioners and patients of both sexes. The experience of public bodies has proved beyond the necessity for argument the advantage of having women to share in the grave responsibility of forming decisions on such questions. The fact that the General Medical Council is the final authority on many issues makes it all the more important that the membership should be as representative as possible.

The time is approaching when candidates will be chosen by local associations, and we should be glad to think that this point of view would be borne in mind by those making the selection. The excellent public work already done by those women selected to serve as officers, representatives on committees, &c., would suggest that it should not be impossible to find a woman candidate worthy of the honour and acceptable to the whole profession.

We are, Sir, yours faithfully,
JANE WALKER,
LETITIA FAIRFIELD.

Harley-street, W., Feb. 6th, 1933.

MIGRAINE AND THE "BRIDGED-IN" SELLA TURCICA

To the Editor of THE LANCET

SIR,—In their interesting account of Migraine in your issues of Jan. 21st and 28th, Dr. Macdonald Critchley and Dr. F. R. Ferguson are good enough to refer at some length to a paper that I contributed recently to your columns,[1] in which I described a type of menstrual headache that seemed to me to be sufficiently characteristic to permit of its differentiation from ordinary migraine. The important practical result of my work was that many of my cases were relieved of their distressing symptoms by the administration of an active ovarian follicular hormone such as theelin, and I am glad to know that Drs. Critchley and Ferguson can endorse the therapeutic value of such treatment, although they dislike the explanation that I suggested of the cause of the headache, and prefer to continue to regard it as a "migraine variant"—a term which makes up in elasticity what it lacks in precision.

In a large proportion of my cases I found that certain abnormalities in the sella turcica could be demonstrated radiologically, and on this account and for various other reasons I formed the opinion that menstrual headache might be due to increased local tension in the pituitary fossa. The most frequent radiological abnormality was calcification of the interclinoid ligaments, but I was careful to say explicitly that I did not believe that the calcification could by itself cause any compression of the pituitary. Drs. Critchley and Ferguson "feel fairly certain" of this, and I only mention the point because I think the relevant paragraph of their paper may leave the cursory reader with the mistaken impression that I do in fact hold this view. My hypothesis was (and still is) that the local tension in the sella turcica is due to an overdevelopment of the diaphragma sellæ and that the interclinoid calcification may be taken as an index of its existence.

In disputing the probability of this hypothesis Drs. Critchley and Ferguson disregard many of the points that I put forward in its favour and that seem to me important; they are content to rely on the fact that they have collected several cases of "bridged-in sellæ" from patients who have never suffered from migraine. In my paper I described two cases of this type in women who never had headaches until gynæcological operations were performed which involved gross interference with the ovaries. It is clear, therefore, that even in women, interclinoid calcification may be symptomless, but the fact remains that my radiological colleague Dr. C. G. Teall has not yet found a case in a woman who did not complain of menstrual headache. In men I have to admit that it may be more frequently found, and I now have notes of two cases without headache.

Of the three cases mentioned by Drs. Critchley and Ferguson in this connexion, two are men and the third a woman with "migraine epilepsy." It is perhaps unfair to criticise prints from radiograms of this region of the skull unless they have been specially produced, but, although I accept the two male cases as instances of bridging, the picture of the third case (Fig. 4) seems, both to Dr. Teall and to me, to be that of a perfectly normal sella turcica. With his considerable experience of this matter, Dr. Teall tells me that he cannot be certain of "bridging" without radiograms taken in the antero-posterior plane, and it would be interesting to know if Drs. Critchley and Ferguson have had this additional investigation carried out.

Finally, Drs. Critchley and Ferguson mention the case of a woman "who has an almost completely 'shut-in sella' and yet gives a history of typical migraine attacks in addition to the menstrual headache." This case seems to them to argue in favour of their view that the *intermittent headache I described* was a migraine variant. The force of the argument escapes me. The perusal of Dr. Critchley's and Dr. Ferguson's paper, it is true, left me in some doubt as to what I might properly regard as typical migraine, but if a woman has it and in addition has a shut-in sella, I see no reason why she should not have a menstrual headache as well. What I should like to know is whether or not her menstrual headache is relieved by treatment with the ovarian hormone, for if it is, and the "typical migraine" remains, it might be argued that this case clearly differentiated the two conditions.

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[1] THE LANCET, 1932, ii., 229.

I am, Sir, yours faithfully,

A. P. Thomson.

Edgbaston, Birmingham, Feb. 4th, 1933.

EARLY DIAGNOSIS OF MALIGNANT DISEASE

To the Editor of The Lancet

Sir,—In an annotation on this subject last week you said that "except by accident, for example during the routine microscopical investigation of a uterus or a breast removed for another reason, it is probable that really early lesions are never detected." I venture to point out that the commonest form of malignant disease of the uterus is carcinoma of the cervix, and that in the majority of cases this starts on the outside and can be suspected in its early stages upon a simple inspection of the cervix. Further on you state that periodic examination must include examination per vaginam and per rectum. Of course such examination would include these; they take exactly five minutes to carry out by means of a vaginal speculum and an illuminated proctoscope.

Everybody agrees that early diagnosis of malignant disease is difficult and must be left to the specialist, but to exclude any abnormality of the organ where accessible cancers occur is simple and should be an everyday duty of the general practitioner. I entirely agree with Dr. Maurice Shaw that such examinations do free people from the subconscious, and sometimes conscious, bogy of cancer. If it is the opinion of some people that propaganda in favour of such examinations may create fear, the least the medical profession can do is to make it known that they are willing to carry out such a procedure without the patients feeling that they are being laughed at. It is quite time the medical profession did something positive towards getting rid of cancerphobia, instead of taking up the negative and hopeless attitude that is at present so common.

I am, Sir, yours faithfully,

Malcolm Donaldson.

Harley-street, W., Feb. 7th, 1933.

THE INDUSTRIAL DOCTOR

To the Editor of The Lancet

Sir,—I am particularly interested in No. XIII. of your series "The Doctor's Day" as I have had a certain amount of experience as an industrial doctor—H.E. and mustard gas, not food—and am a humble member of the Council of Industrial Medicine. But I wish your author had stressed the lack of special training in industrial medicine in this country. I am not going to preach on my hobby, but I cannot help wishing that people, especially industrials of all classes, would look into the matter and recognise that the present system is not adequate to give the best service, and that even though the certifying factory surgeon may fill in forms very well, only a few of his kind have the time to give all their energies to this most interesting medico-legal-psychological specialty. Even a certifying surgeon ought to have the opportunity of taking a course in what he is to be regarded as specially knowing. Universities in our great urban centres should easily be able to give a first part of theory and a second part of paid practical work to one who wants to take up industrial medicine, while a diploma in this subject would help in deciding appointments as certifying surgeon, factory doctor, or medical referee.

Another matter which needs further discussion is one which your author leaves out entirely—viz., the relation of the factory doctor to the panel doctors of his workers. It seems from his description of his day that he is doing a lot of the work which is paid for to the panel doctor. Personally I do not like the factory doctor to *be* the panel doctor of the workers in his works, as this smacks of compulsion in choice of doctor. Moreover it is better, as I see it, to keep oneself clear, save for medical, surgical, and first-aid, and such work as the factory nurses can do—rest and a dose of salts or aspirin, for instance—from encroachment on the work of a panel doctor. He would better remain the industrial expert to whom the panel doctor should apply before certifying incapacity, so that his facts may be the more accurate, and so that he may get the special knowledge of the industrial lesion possessed by a properly trained industrial doctor but hardly to be expected in a busy general practitioner. And why should he do the other fellow's work and not draw his pay also?

I am, Sir, yours faithfully,

H. G. P. Castellain.

Moseley, Birmingham, Feb. 7th, 1933.

PULMONARY ASBESTOSIS

To the Editor of The Lancet

Sir,—In your report of the proceedings of the Tuberculosis Association last week I am reported to have said that "an interesting feature of the disease was the extreme length of time that elapsed as a rule between the exposure to the dust and death." I actually referred to the length of time, as a general rule, between the exposure to the dust and the onset of symptoms, which as I pointed out may even commence several years after the patient has left the factory. I also pointed out that pulmonary asbestosis was a more serious disease than silicosis, proving fatal on an average after about 13–15 years' employment as compared with 32–42 years in silicosis (figures from report of Inspector of Factories and Workshops 1931).

I am, Sir, yours faithfully,

Harley-street, W., Feb. 5th, 1933. Philip Ellman.

Mr. A. Mortimer, secretary of the Wholesale Drug Trade Association, writes that the members of his association welcome the removal of ambiguity in thyroid dosage by the new definition in the British Pharmacopœia, 1932 (see The Lancet, Jan 28th, p. 208, and Feb. 4th, p. 277).

A Remedy for Influenza.—Dr. Laver informs us by cable from Kalgoorlie, Western Australia, that he finds the following treatment specific for influenzal pneumonia: sodium salicylate grs. 2, glycerin ʒi, and (? tincture of) strophanthus ♏½—hourly from morning till midnight; hot drinks between doses to help diaphoresis; and mustard on the chest.

Solar, Terrestrial and Cosmic Radiations.—An international association has been formed for the purpose of study of this subject. The headquarters have been established at Nice, because the clear atmosphere there is particularly suited to such observations as the society hopes to undertake. Meetings will, however, be held each year in different towns, and a report is soon to be issued summarising the results which have already been obtained. Further particulars may be had from the president of the Société Médicale, 24, rue Verdi, Nice.

OBITUARY

SIR FREDERIC HALLETT

IT is not given to every man to live to see his own name perpetuated by those he has served, in the award of an annual prize bearing his name, which was the privilege of Sir Frederic Hallett, who died, in his seventy-third year, at his home, Point Close, Long Wittenham, Berkshire, on Feb. 5th, 1933.

Born in May, 1860, Frederic Greville Hallett was the fourth son of the late James Alfred Hallett, J.P., of Putney. He was educated at Westminster, privately, and abroad, and at the age of 17 he became a junior clerk at the Royal College of Surgeons of England, thus beginning an association with the Royal Colleges which was to endure for 50 years.

In 1882 he was appointed assistant secretary of the College and at once became deeply immersed in the formation and constitution of the "Examining Board in England by the Royal College of Physicians of London and the Royal College of Surgeons of England"—known as the English Conjoint Board—of which he became the first secretary in 1886, a post which he held until his retirement in December, 1927. He continued the management of the administrative side of the examinations of the Royal College of Surgeons—for the Fellowship and for the Licence in Dental Surgery—being given the title of Director of Examinations of the College of Surgeons in January, 1914. In these two posts Hallett's genius for administration and organisation found its true outlet, for the entire system under which the examinations of the English Colleges are conducted—a system which has won the admiration of educational authorities all over the world, and in not a few instances has served as a pattern—was his creation. When at the invitation of the Carnegie Foundation in 1912 he visited America to explain the working of the system, the success of his visit cemented the sympathy and understanding between the medical educational authorities in both countries, and the establishment of the National Board of Medical Examiners of the United States, with its procedure similar to that of the Royal Colleges, was largely due to Hallett's inspiration, sympathy, and guidance. The system proved, for the first time, that it was possible to conduct a purely external examination of large numbers of candidates in such a way that not only could justice, expedition, and accuracy be obtained, but also that the result of a candidate's examination could be given to him on the same day as he completed his examination. It is safe to say that, until some better means of selection than the examination system can be evolved, nothing fairer than the "conjoint system" is likely to be created. Under Hallett's inspiration it permits the retention of a human element, and there must be many practitioners to-day who owe not a little to the ever-ready sympathy and advice, in failure or success, of Hallett, while "Hallett's pink papers for pilled people" are still handed to certain unlucky ones. His work for the Royal Colleges in connexion with the building of the first Examination Hall on the Embankment and again with the building of the present Hall in Queen-square, Bloomsbury, was recognised by an honorarium of £500 from the Royal Colleges in 1909. The removal was made not without reluctance, and it was due to Hallett that its advantages were soon demonstrated.

SIR FREDERIC HALLETT

[Photograph by Russell

In 1902 the Royal Colleges established the Imperial Cancer Research Fund, of which Hallett became the first secretary, in addition to his other duties. He retained this position until last year when he resigned on account of his health, and the executive committee of the fund in the last annual report express their deep appreciation "of the way he has guided the policy of the fund during its 30 years of existence, and of his far-sighted ability in drafting its constitution." In recognition of these services Hallett was elected a vice-president of the Fund and awarded a pension.

On the outbreak of war Hallett took over, as additional duties, the responsible work of secretary to the Committee of Reference—a statutory committee appointed to arrange for the calling up and demobilisation of the medical staffs of the London hospitals—besides acting as secretary to the joint delegates of the Committee of Reference and of the Central Medical War Committee, and to various subcommittees of the delegates. It will, thus, be believed that during the war period he would have little spare time, but he found it and used it in helping the boy scouts as the Commissioner for the Hammersmith district, and in serving as a special constable in the Headquarters Division from 1914–17. In 1920 his war work was recognised by the award of the O.B.E., and on his retirement, in December, 1927, after 50 years of devoted service to medical education in general and to the Royal Colleges in particular, Hallett received the honour of knighthood. In 1928 the Council of the Royal College of Surgeons desired to make him a personal gift to commemorate his outstanding work for the College during half a century, and, in deference to his own wish, instituted the Hallett prize which is awarded twice yearly at each primary examination for the Fellowship to the candidate who most distinguishes himself in the examination in anatomy and physiology.

Such is the brief record of one whose zeal and devotion to duty were an inspiration. But outside the official duties, which occupied so much of his life, Hallett was a man of many parts. He was an active J.P. for the county of Berkshire. He was a devoted churchman throughout his life; his energies, some 30 years ago, in the parishes of St. Albans, Fulham, and later at St. John's, Holland-road, are still remembered with gratitude, while during his later years his advice in the deliberations of the church in the diocese of Oxford was widely sought and valued. He was an active Mason, having been initiated in the Old Westminster's Lodge in 1891, becoming Worshipful Master in 1902–03 and serving as treasurer of the lodge from 1906–20. He was promoted to London rank in 1912, and when he finally resigned in 1929 he was elected an honorary member of his lodge.

And always the thing nearest to his heart was his home. In 1884 he married Margaret Elizabeth Lane, the daughter of James Lane, F.R.C.S., and niece of Samuel Lane, whose name is so intimately associated with the foundation of St. Mary's Hospital Medical School. Many years ago he gave up playing golf and billiards—at both of which he could well hold his own—because they kept him away from his home, and he found his main recreations in fishing and boating, for the river runs at the end of his beautiful garden. His well-known hobby was the art of illuminating, and many are the addresses and rolls of honour which testify to his artistic skill and ability, notably the beautiful book of the Roll of Honour in the House of the British Medical Association, and the illustrations to the Legacy Book of the Society for Relief of Widows and Orphans of Medical Men. Specimens of these were reproduced in our pages recently (THE LANCET, 1932, i., 63), and while the absence of colour modifies their beauty, the grace of line and the dexterity of penmanship are very evident.

Throughout his life, sharing all his work and interests, he had the help and support of his wife, who during the last painful months of his fatal illness had scarcely left him. That illness, which struck him down in July, 1931, was borne with the fortitude and courage which sprang from a profound faith and he was bravely cheered by the loving care of Lady Hallett. She survives him, with a son and a daughter, the wife of Mr. H. H. Rew, who succeeded her father in his post at the Royal Colleges.

VICTOR EDGAR SORAPURE, M.B., F.R.C.S. Edin.

THE death of Dr. V. E. Sorapure occurred, after a long resistance to a tuberculous infection manifesting many painful symptoms, in a nursing home in Bournemouth on Jan. 29th, at the age of 58.

Dr. Sorapure received his medical education at the Universities of Edinburgh and St. Andrews and the medical schools of Dundee and Liverpool. He was destined by his parents for a business career in the West Indies, but had set his heart on becoming a doctor and, largely owing to his own enterprise, he achieved his desire to be trained in England. He graduated as M.B., Ch.B. Edin., in 1899, and later took the F.R.C.S. Edin. and became a resident medical officer at the Liverpool Hospital for Women. He then returned to the West Indies, practised successfully there, and later in the United States. He was for a time professor of pathology and clinical medicine in the Fordham University, was assistant physician to the Polyclinic Hospital, and medical adviser to the Life Extension Institute. He made some interesting communications to the American medical press on locomotor-ataxy and allied subjects, and was carrying on a large practice in New York when, at the outbreak of war, he returned to England with a wife and three young children to serve as a temporary officer in the R.A.M.C. He was stationed for a time in France, but was finally attached to the Hampstead Hospital, where he worked under Sir James Mackenzie. With Mackenzie he made a close study of certain of the problems associated with altered blood pressures, as exemplified in communications to this paper, but his main literary work is seen in his considerable contributions to the Oxford Index of Therapeutics, which appeared in 1921 under his editorship, as a compendium of general medicine, with a direct appeal to the family doctor.

The task of editing a collection of essays of varying value Sorapure discharged with zeal and ability, and at the same time he obtained a large practice in London, having given up the idea of returning to New York. His industry was striking, and a personal friend and medical colleague writes of him that "very soon he could scarcely cope with the work which came his way. He never scamped a case; he never thought of himself or of his health and never took a holiday nor a week-end off. Until he was over 56 he saw patients, Sundays and weekdays alike, from 8 A.M. till after midnight. Once he told me that at that age he was working as long hours and doing as heavy work as when he was 30. He became known to a wide circle of practitioners as well as patients as 'having a flair for diagnosis.' Some two years ago the strain thus indicated began to tell; thereafter, until the end, life was for him a prolonged battle against ill-health. Patients and colleagues who worked with him will not easily forget Sorapure's patience and unselfish personality."

JOHN STEPHENSON, C.I.E., F.R.S.

LIEUT.-COLONEL, I.M.S. (RETD.)

BY the death of Colonel Stephenson in London on Feb. 2nd the Indian Medical Service loses one of its most distinguished scientific members. Born at Padiham, Lancs, in 1871, he was educated at Burnley Grammar School and Owen's College, where he took many prizes and obtained honours at the M.B. examinations of both Manchester and London University. He had previously taken the London B.Sc. and went on later to take the D.Sc., as well as the F.R.C.S. Eng. After holding resident posts at the Manchester Royal Infirmary, he entered the Indian Medical Service in July, 1895, at the head of his batch, and had a varied career in India, including active service on the north-west frontier of India in 1897 with medal and clasp, and in Egypt during the war, when he was mentioned in despatches. From 1900 to 1906 he held various civil appointments, on plague duty and in civil surgeonships, but his most important work began in 1906 when he was appointed to the chair of biology in the Lahore Government College, and six years later to that of zoology. At the same time he was made principal of the college, and in 1918 reached the very unusual position for a medical officer of vice-chancellor of the Punjab University—a remarkable tribute to his personality and ability. He was a good linguist, and published the text with translation and commentary of the Hadiqatu-l-Haqiqat. His heart, however, was in his work as a zoologist, and he became an acknowledged authority on the oligochætes and was elected F.R.S. in 1930. He was also editor of the Fauna of British India series. After retiring from the service he was lecturer in zoology from 1920–29 in the University of Edinburgh, and continued to the end of his life a number of valuable studies at the South Kensington Natural History Museum. Colonel Stephenson was a modest and unassuming man, popular with his co-workers and students. The fact that he never enjoyed robust health makes more remarkable the amount of work which he accomplished.

PROF. WILLIAM PHILLIPS GRAVES

WE announced last week the death of Prof. William Phillips Graves, an outstanding figure in gynæcology, whose reputation extended internationally far beyond Harvard, which he adorned, and Boston where he practised. We have received from Prof. Blair Bell the following testimony to the man and his work :—

"William Phillips Graves achieved greatness in his special subject—gynæcology—not only because of his natural ability, but also because he was a man of great character. Since they have not been published, it will not be inappropriate to reproduce, as a text for the few words of appreciation that follow, the short eulogy spoken to him when he was admitted an Honorary Fellow of the British College of Obstetricians and Gynæcologists in December last.

> 'In this world of haste and hurry—conditions not unknown in your own country—you stand out in our branch of medicine as a man of quiet contemplation, wise discretion, and sober judgment. Your influence on the progress of gynæcology has been profound, not only in the United States of America, but wheresoever there exists a parcel post for the transport of your classical works. You are an artist, too, and the beautiful illustrations drawn by your own hand, which adorn your books and papers, are the admiration of all. You bring artistry to your craft. You are, besides, a thinker; and beneath a deep reserve lie golden thoughts. In honouring you, we honour obstetrics and gynæcology.'

"In the United States of America, Dr. Graves—for that is how all medical practitioners there, whether professors, surgeons, or physicians, are addressed—was regarded as *the* sound, conservative, yet progressive gynæcologist, and as a man of great experience and wide learning. I received the impression on both the occasions I was in America that he occupied the same position in gynæcology as that which the late Whitridge Williams held in obstetrics—both were trusted; and their opinions were held in unqualified respect.

"I remember so well expressing in one of the communications I made there—I think to the A.M.A. —my views on the biological value of the ovaries, and the importance of conservative surgery in respect of them. I was told beforehand that Graves would criticise my views, that he, as many of my colleagues in this country and elsewhere, held no brief for the importance of the ovarian function. Graves did not speak; but he came to me afterwards and said: 'I intended to oppose your views, but you made some points that I have not heard before; I have not changed my views yet; I must consider the matter afresh.' When he was in Manchester years later, when I read another paper on the subject, he told me he had been converted. I merely quote this story to show the open-mindedness of the man, and the cautious and fair way in which he formed his judgments.

"It is quite unnecessary for me to speak in detail of his wonderful text-book, his recent work 'Female Sex Hormonology,' or of his numerous papers. They are all marked by the same desire for truth, and by the same lucid thought and expression. His artistic ability is shown in the beautiful illustrations which he made for his medical publications. He also drew for his own pleasure, and for that of his friends, and was not only a draughtsman, but had also very sensitive and artistic feelings. Again let me give an illustration. He had recently purchased a country estate, and in describing this to me he said: 'There is a very old ash-tree by the lawn, but it is dead, the branches are bare. A friend asked me why I did not cut it down. I told him to come and see it in the moonlight.' I had long known that he admired our trees more in their winter bareness, when the outlines of their limbs are clear-cut against the sky or in the moonlight, than when they are in their summer dresses. That shows the kind of man he was in his innermost self.

"He was a deep reader of fine literature, which he was ever ready to discuss, and a great practical surgeon and accomplished teacher. Many of us have lost a close personal friend—a man who was a great gentleman, a sportsman, and a learned and inspiring colleague."

MEDICAL NEWS

Royal Colleges of Physicians of London and Surgeons of England.

At the final examination of the Conjoint Board held from Jan. 2nd–26th the following candidates were approved in the subjects indicated, but are not yet eligible for diplomas :—

Medicine.—D. R. Ashton, St. Bart.'s; A. D. Aveling, Camb. and London; J. E. M. Ayoub, Oxf. and St. Thomas's; L. J. Beynon, St. George's; I. N. Blusger, St. Bart.'s; W. A. Bowdler, St. Thomas's; C. G. Bree, Univ. Coll.; A. Brown, King's Coll.; Hilda M. Brown, Royal Free; S. G. Browne, King's Coll.; T. J. K. Brownlees, St. Bart.'s; J. H. J. Crosse, Camb. and St. Bart.'s; W. J. B. de Gruchy, Camb. and St. Thomas's; A. E. De Sa, Bombay; R. G. Fear, St. Bart.'s; M. K. Gadgil, Bombay and West London; J. Gordon, Middlesex; H. T. J. Hynes, St. Bart.'s; A. H. [illegible] B. F. Jackson, St. Bart.'s; J. F. Jarvis [illegible] King's Coll.; S. H. Kessler, Long Isl [illegible] Hilda I. Lanceley, King's Coll.; S. Lee, [illegible] Mason, Middlesex; Ellen Mayer, King' [illegible] Bombay and St. Bart.'s; S. D. J. Nand, Manchester; L. G. Nicholas, Cardiff; R. M. M. C. Orpwood and W. M. Oxley, St. Bart.'s; H. E. S. Pearson, St. Thomas's; G. D. Pirrie, Camb. and King's Coll.; M. L. Platt, Middlesex; M. Richmond, London; M. A. Rugg-Gunn, Camb. and St. George's; I. M. Shulman and R. T. Simcox, St. Bart.'s; E. J. Smith, King's Coll.; P. G. Stainton, Guy's; B. A. Thomas and W. H. D. Trubshaw, St. Bart.'s; G. N. Wardle, St. George's; C. E. M. Ware, St. Bart.'s; H. Waterman, Leeds; Elma Wolmarans and T. M. Wynter, Royal Free.

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Tattersall, St. Thomas's; Barbara M. G. Taylor, Leeds; T. P. Thamotheram, Ceylon and King's Coll.; H. W. Thomas, London; Mary G. Thomas, Bristol; D. M. Thomson, St. Bart.'s; H. B. Tipler, Camb. and London; J. A. Vermylen, Univ. Coll.; G. N. Wardle, St. George's; Fina Wolmarans, Royal Free; O. H. M. Woodbridge, Guy's; L. S. P. Woodhead, Westminster; T. M. Wynter, Royal Free; R. M. Yeo, Camb. and St. Thomas's; A. R. C. Young, St. Bart.'s; and I. Zieve, Cape and Guy's.

Surgery.—G. G. Airey, St. Mary's; C. F. S. Aiken, Oxf. and Middlesex; J. E. O. Amegatcher, Camb. and St. Thomas's; D. A. Andersen, Univ. Coll.; T. P. Ayre, Durham; G. F. Barran, St. George's; H. R. Bathurst-Norman, Oxf. and St. Thomas's; R. B. Bell, Middlesex; W. T. C. Berry, Camb. and St. Bart.'s; N. B. Betts, Camb. and St. Thomas's; R. W. Billington, Camb. and Westminster; F. M. Braithwaite, Camb. and Manchester; F. J. Brice, London; G. O. A. Briggs, Camb. and St. Bart.'s; G. C. Brown, Camb. and St. Mary's; P. S. Buckley, Oxf. and London; P. G. Burgess, Oxf. and Manchester; E. G. L. Bywaters, Middlesex; A. H. Charles, Camb. and St. George's; M. M. D. Chughtai, Panjab and Univ. Coll.; K. R. D. Coles, Guy's; J. Collinson, Camb. and Leeds; L. Z. Cosin and H. T. Crondace, Guy's; T. M. Cuthbert, St. Bart.'s; E. M. Darmady, Camb. and St. Bart.'s; W. Dean, Westminster; G. De Lacey, Cardiff and London; Helen E. Dimsdale, Camb. and Univ. Coll.; P. E. Dipple, St. Bart.'s; J. H. Dixon, Camb. and St. Thomas's; R. J. Drummond, Guy's; J. J. A. Fableton, St. Mary's; Dorothy K. Emery, Camb. and Univ. Coll.; P. R. Evans, Manchester; H. P. Fleming and P. A. Forsyth, St. Thomas's; L. B. Furber, St. Bart.'s; V. V. Garde, London; W. L. George, St. Mary's; R. G. B. Gilbert, St. Thomas's; M. S. Good, Oxf. and St. George's; D. R. Gray, Camb. and Charing Cross; E. M. Griffin, Camb. and London; T. F. R. Griffin, St. Mary's; S. J. Hadfield, St. Bart.'s; V. E. L. Hart, London; N. H. Harwood-Yarred, Camb. and St. Thomas's; E. Hill, Camb. and London; F. G. Hinks, Camb. and St. Thomas's; I. W. Hockley, St. Thomas's; M. I. A. Hunter and M. J. Ingram, Camb. and St. George's; C. W. John, St. Bart.'s; W. A. Johnson, St. Mary's; A. E. Jones, Guy's; N. H. Jones, St. Bart.'s; S. E. L. Kabla, London; A. B. King, Univ. Coll.; E. W. Kinsey, Cardiff and London; H. B. Lee, St. Bart.'s; C. A. Lewis, Camb. and King's Coll.; M. J. Lindsey, Guy's; M. J. McCormack, London; W. S. McKenzie, Camb. and Middlesex; J. N. Majumdar, Calcutta and Middlesex; T. F. Malcolm, Manitoba; T. C. Maling, Camb. and St. Thomas's; J. W. Maycock, Camb. and Middlesex; K. S. Menon and H. N. Miles, King's Coll.; A. Miller, Camb. and St. George's; S. C. Misra, Lucknow and Middlesex; G. T. L. F. Morris, Birmingham; H. Mower, St. George's; P. D. Mulkern, St. Thomas's; W. B. Mumford, Camb. and St. George's; Eileen A. Neilson, Univ. Coll.; W. L. Ogle and L. C. Oliver, Guy's; G. S. W. Organe, Westminster; J. P. S. Peck, Camb. and London; A. K. Price, St. Thomas's; S. A. Propert, Camb. and St. Thomas's; B. V. Rao, London; K. Robson, Camb. and Middlesex; Christine M. Rooke and R. D. Rowlands, Univ. Coll.; A. L. Secchi, St. Thomas's; R. Shackman, St. Bart.'s; E. P. Sharpey-Schafer, Univ. Coll.; J. V. Shemilt, St. Thomas's; P. P. Sheth, Bombay and Middlesex; M. Shun-Shin, Univ. Coll.; T. W. Smalles, Camb. and Leeds; D. W. Smithers, Camb. and St. Thomas's; J. G. C. Spencer, Camb. and London; J. T. W. Spiridion-Kliszczewski, Camb. and Westminster; H. G. Stanton, St. Bart.'s; R. H. Swinglehurst, Birm. and London; E. W. Taylor, Camb. and St. George's; T. P. Thamotheram, Ceylon and King's Coll.; H. B. Thomas, Camb. and St. Thomas's; M. Tin, Guy's; H. B. Tipler, Camb. and London; G. E. H. Tisdall, Camb. and St. Thomas's; E. O. Walker, Camb. and Bristol; G. E. Walker, Guy's; G. I. Watson, Camb. and St. Thomas's; C. J. G. White and A. Willcox, Camb. and Middlesex; R. M. Yeo, Camb. and St. Thomas's; and E. C. Zorab, Guy's.

Pathology.—E. M. Abelson, Leeds; J. B. Andosen, King's Coll.; R. M. H. Anning, St. Mary's; J. E. M. Ayoub, Oxf. and St. Thomas's; H. Baker, Manchester; H. J. Barrie, Oxf. and London; G. E. M. Benson, Oxf. and St. Thomas's; L. J. Beynon, St. George's; I. N. Blusger and A. R. Boney, St. Bart.'s; C. F. R. Briggs, Univ. Coll.; J. A. Brocklebank, Guy's; G. C. Brown, Camb. and St. Mary's; N. G. L. Carroll, Liverpool; F. F. Cartwright, King's Coll.; A. S. Cheong, St. Mary's; T. L. Chester-Williams, St. Bart.'s; R. D. Clay, King's Coll.; L. Z. Cosin, Guy's; Margaret C. Cox, Royal Free; S. W. Croome, King's Coll.; J. D. Cruickshank, Birmingham; Hilda M. S. Davidson, King's Coll.; D. O. Davies, St. Bart.'s; Helen E. Dimsdale, Univ. Coll.; G. V. W. Doherty, Guy's; P. J. England, Cardiff; E. Fernandes, King's Coll.; J. M. Flower, Westminster; H. A. Freeman, Liverpool; D. L. Fromow, London; Violet Fry, Bristol; N. W. Gardener, Guy's; B. Gaunt, Birmingham; R. G. B. Gilbert, St. Thomas's; [illegible] H. Goldfarb, Univ. Coll.; I. H. Griffiths an[illegible] H. W. Hall, Univ. Coll.; G. L. Hard[illegible] George's; T. T. Hardy, Oxf. and St. [illegible] Harrington, Oxf. and St. Mary's; Edi[illegible] Free and Bristol; K. J. Harvey, St. Bart.'s; C. V. A. Henriques, King's Coll.; E. C. Herten-Greaven, London; J. R. Hill, St. Bart.'s; J. M. Holford, Camb. and St. George's; R. H. K. Hope, Univ. Coll.; M. H. Hosny, Birmingham; A. C. L. Houlton, Camb. and St. Bart.'s; T. H. Howell, St. Bart.'s; J. R. Hughes, Middlesex; C. C. Hurst, Manchester; L. R. Jain, Birmingham; R. W. John, Cardiff; E. H. Johnson, Leeds; A. D. Jones, Bristol; G. F. Jones, St. Mary's; V. D. Jones, Univ. Coll.; J. Kingston, London; Joan F. M. Lamplugh, Birmingham; J. H. [illegible] B. Lee, St. Bart.'s; J. E. Lewis, Oxf. [illegible]ouisa A. Loder, King's Coll.; O. Lyth, G[illegible]ckinlay, King's Coll.; J. N. Majumdar, Ca[illegible]; E. H. Markby, Leeds; Bertha Marston, Birmingham; T. D. M. Martin, St. Thomas's; P. C. Matthew, Univ. Coll.; R. F. Matthews, Middlesex; L. H. Mattison, Manchester; E. A. Mayston, Guy's; K. S. Menon, Madras and King's Coll.; J. R. Miles, Cardiff; T. Miles, St. Thomas's; C. Mitchell, Guy's; J. Montgo[illegible] P. Morel, Camb. and St. Bart.'s; C[illegible]d St. Thomas's; P. D. Mulkern, St. [illegible] Bombay and St. Bart.'s; S. D. J. Nand, Manchester; Eileen A. Neilson, Univ. Coll.; F. J. O'Dowd, Birmingham; D. G. Oehlers, London; A. G. Palin, St. Thomas's; H. S. Pasmore, Univ. Coll.; H. E. S. Pearson, St. Thomas's; V. G. Peckar, Univ. Coll.; R. C. Percival, London; G. Phipps, St. Thomas's; J. W. Piper, Guy's; F. W. M. Plant, Birmingham; E. J. Pryn, Guy's; B. V. S. Rao, Mysore and London; V. B. Reckitt, Guy's; M. Richmond, London; Marjorie C. A. Robson, Camb. and Birmingham; Christine M. Rooke, Univ. Coll.; J. Rosenbaum, St. Bart.'s; M. A. Rugg-Gunn, Camb. and St. George's; M. F. P. Ryan, King's Coll.; C. A. J. Sampson, St. Thomas's; G. H. Saunders, Middlesex; G. E. Scott, Oxf. and St. Thomas's; S. K. Sen, Camb. and St. Bart.'s; G. H. Shaw, St. Thomas's; P. P. Sheth, Bombay and Middlesex; I. M. Shulman, St. Bart.'s; M. Shun-Shin, Univ. Coll.; R. T. Simcox, St. Bart.'s; T. O. C. Smith, Univ. Coll.; L. J. Stoll, Guy's; R. J. C. Sutton, St. Bart.'s; G. L. B. Thurston, Guy's; H. B. Tipler, Camb. and London; F. W. Treadwell, Birmingham; J. R. Vaid, St. Bart.'s; J. L. Whatley and C. S. Whitehouse, Birmingham; V. H. Wilson, Camb. and St. George's; C. R. Wright, Liverpool; and C. H. Yeoh, Oxf. and St. Thomas's.

University of London

Two lectures on the history of medicine will be given in the large lecture theatre of University College medical school, University-street, W.C., at 4.15 P.M. on Wednesdays, Feb. 15th and 22nd, by Dr. J. S. Prendergast (vice Prof. Charles Singer). In his first lecture he will deal with Greek Medicine and in his second with Renaissance Medicine.

University of London Medical Graduates Society

This society was entertained by the Society of Apothecaries of London on Feb. 2nd. The Master (Dr. Cecil Wall) received the members and gave a short address on the history of the society, with special reference to their development as a licensing body for the practice of medicine. Lady Barrett returned thanks. Particulars of membership of the society may be had from the hon. secretaries at 11, Chandos-street, London, W.1.

Royal Sanitary Institute

A sessional meeting of this institute will be held on Friday, Feb. 24th, in the Town Hall, Warrington, at 6.30 P.M., when Dr. John Gifford, deputy medical superintendent of the Winwick Mental Hospital, will speak on Sterilisation of the Mentally Defective. The local secretary is Dr. G. W. N. Joseph, of the health department, Warrington.

Chadwick Lectures

On Tuesday, Feb. 21st, at 5.15 P.M., in the lecture-hall of the Royal Society of Tropical Medicine and Hygiene, 26, Portland-place, London, W., Dr. Matthew B. Ray will deliver a lecture on the Hippocratic Tradition, which will be illustrated with lantern slides. Further particulars of the Chadwick public lectures may be obtained from the secretary, Mrs. Aubrey Richardson, at 204, Abbey House, Westminster, London, S.W. 1.

British Red Cross Society

The British Red Cross Society and Order of St. John Hospital Library has organised three lectures which will be given at the London School of Economics, Houghton-street, Aldwych, London, W.C. On Wednesday, Feb. 22nd, Mr. C. E. A. Bedwell, house governor of King's College Hospital, will speak on the Hospital; on March 1st Mr. Lamb, of the central library, Sheffield, on the Library; and on March 8th Mrs. M. E. Roberts, organising secretary of the society, on the Librarian. All the lectures are at 5.30 P.M.

Hospital Almoners' Association

The annual dinner of this association was held on Saturday last, Feb. 4th, when Miss C. Morris took the chair and presided over the largest annual festivity the association has seen. The toast of Prosperity to the Hospital Almoners was proposed by Sir Frederick Menzies, who in an interesting address outlined the situation of the hospitals now under the control of the London County Council, which since the provisions of the Public Health Act of 1929 has become the largest hospital authority in the world. Sir Frederick, indicating what this must mean in the extension of the work of almoners, recognised that work as now constituting an integral part of hospital administration. Miss M. Edminson, in reply, commented wittily on the public uncertainty as to what is meant by an almoner, and testified to the increasing recognition by all hospitals of the service of the almoners' department. Miss E. Lewis proposed the toast of the guests, with fervour in spite of, as she said, feeling "cowhearted"—an adjective picked up from a timid woman whom she was visiting in the course of her hospital duties. Prof. W. H. Maxwell Telling replied. The function was held in the Hans Crescent Hotel, and was a very successful one.

practised. We have received from Prof. Blair Bell the following testimony to the man and his work:—

"William Phillips Graves achieved greatness in his special subject—gynæcology—not only because of his natural ability, but also because he was a man of great character. Since they have not been published, it will not be inappropriate to reproduce, as a text for the few words of appreciation that follow, the short eulogy spoken to him when he was admitted an Honorary Fellow of the British College of Obstetricians and Gynæcologists in December last.

> 'In this world of haste and hurry—conditions not unknown in your own country—you stand out in our branch of medicine as a man of quiet contemplation, wise discretion, and sober judgment. Your influence on the progress of gynæcology has been profound, not only in the United States of America, but wheresoever there exists a parcel post for the transport of your classical works. You are an artist, too, and the beautiful illustrations drawn by your own hand, which adorn your books and papers, are the admiration of all. You bring artistry to your craft. You are, besides, a thinker; and beneath a deep reserve lie golden thoughts. In honouring you, we honour obstetrics and gynæcology.'

"In the United States of America, Dr. Graves—for that is how all medical practitioners there, whether professors, surgeons, or physicians, are addressed—was regarded as *the* sound, conservative, yet progressive gynæcologist, and as a man of great experience and wide learning. I received the impression on both the occasions I was in America that he occupied the same position in gynæcology as that which the late Whitridge Williams held in obstetrics—both were trusted; and their opinions were held in unqualified respect.

"I remember so well expressing in one of the communications I made there—I think to the A.M.A.—my views on the biological value of the ovaries, and the importance of conservative surgery in respect of them. I was told beforehand that Graves would criticise my views, that he, as many of my colleagues in this country and elsewhere, held no brief for the importance of the ovarian function. Graves did not speak; but he came to me afterwards and said: 'I intended to oppose your views, but you made some points that I have not heard before; I have not changed my views yet; I must consider the matter afresh.' When he was in Manchester years later, when I read another paper on the subject, he told me he had been converted. I merely quote this story to show the open-mindedness of the man, and the cautious and fair way in which he formed his judgments.

"It is quite unnecessary for me to speak in detail of his wonderful text-book, his recent work 'Female Sex Hormonology,' or of his numerous papers. They are all marked by the same desire for truth, and by the same lucid thought and expression. His artistic ability is shown in the beautiful illustrations which he made for his medical publications. He also drew for his own pleasure, and for that of his friends, and was not only a draughtsman, but had also very sensitive and artistic feelings. Again let me give an illustration. He had recently purchased a country estate, and in describing this to me he said: 'There is a very old ash-tree by the lawn, but it is dead, the branches are bare. A friend asked me why I did not cut it down. I told him to come and see it in the moonlight.' I had long known that he admired our trees more in their winter bareness, when the outlines of their limbs are clear-cut against the sky or in the moonlight, than when they are in their summer dresses. That shows the kind of man he was in his innermost self.

"He was a deep reader of fine literature, which he was ever ready to discuss, and a great practical surgeon and accomplished teacher. Many of us have lost a close personal friend—a man who was a great gentleman, a sportsman, and a learned and inspiring colleague."

MEDICAL NEWS

Royal Colleges of Physicians of London and Surgeons of England.

At the final examination of the Conjoint Board held from Jan. 2nd–26th the following candidates were approved in the subjects indicated, but are not yet eligible for diplomas:—

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Midwifery.—Winifred L. Acraman, Cardiff; S. B. Adams, Bristol; S. R. Ali, Bombay and King's Coll.; J. E. O. Amegatcher, Camb. and St. Thomas's; D. A. Andersen, Univ. Coll.; J. B. Andosca, King's Coll.; T. R. Aubrey, Oxf. and Bristol; F. H. Barber, Birmingham; H. J. Barrie, Oxf. and London; A. J. *Board*, Bristol; J. Boyle, St. Mary's; C. F. R. Briggs, Univ. Coll.; G. O. A. Briggs, Camb. and St. Bart.'s; Hilda M. Brown, Royal Free; P. S. Buckley, Oxf. and London; K. L. Buxton, Camb. and St. Thomas's; H. R. Cara, Liverpool; F. F. Cartwright, King's Coll.; A. S. Cheong, St. Mary's; E. L. Cohen, Camb. and St. Bart.'s; F. H. Coleman, Camb. and London; Dorothy C. J. Cookson, Royal Free; F. E. Corea, St. Bart.'s; C. F. Critchley, St. Thomas's; T. M. Cuthbert, D. L. L. Davies, and E. E. Dodson, St. Bart.'s; Ruth C. Easterling, King's Coll.; L. R. L. Edwards, Guy's; P. J. *England, Cardiff*; *S. M. Evans, Camb. and St. Thomas's*; C. Fletcher, St. Bart.'s; P. A. Flood, Camb. and St. Thomas's; G. L. Foss, Camb. and Bristol; T. Foulds, Manchester; H. Goldfarb, Univ. Coll.; C. L. Greening, Durham; E. M. Griffin, Camb. and London; I. H. Griffiths, Cardiff and Middlesex; A. A. Hakeem, Bombay and Manchester; H. W. Hall, Univ. Coll.; Ida M. Hamp, Royal Free; J. H. T. Harrington, Oxf. and St. Mary's; T. N. Hart, Manchester; K. J. Harvey, St. Bart.'s; Pearl M. Heirshberg, Royal Free; G. A. H. Herbert, London; K. Hooper, Guy's; R. H. K. Hope, Univ. Coll.; C. Houghton-Brown, St. George's; A. V. House, Bristol; D. A. Hovenden, St. Thomas's; J. A. C. Hunter, Guy's; R. H. Isaac, St. Bart.'s; A. H. Ismail and G. H. James, Birmingham; J. W. James and Margaret H. James, Univ. Coll.; R. G. James, King's Coll.; D. A. Jennings, Oxf. and St. Thomas's; H. G. John, Cardiff and Univ. Coll.; E. H. Johnson, Leeds; G. P. Jones, Cardiff; N. K. Kal, Univ. Coll.; C. W. C. Karran, Camb. and St. Thomas's; Alice M. Kenny, Royal Free; S. H. Kessler, King's Coll, E. W. Kinsey, Cardiff and London; Freda H. Knight, Manchester; Mildred G. Latham, Royal Free; C. A. Lewis, Camb. and King's Coll. [illegible] Bristol;
[illegible] Guy's; [illegible]
[illegible] and [illegible]
[illegible] Marston [illegible]
[illegible] oyal F[illegible]
Mumford, Camb. and St. G[illegible]
C. R. Naidu, Bombay and [illegible]
P. B. L. Nicholas, Londo[illegible]
Organe, Westminster; A. J. Owston, Camb. and St. Ba[illegible] H. S. Pasmore, Univ. Coll.; S. Paul, Guy's; J. P. S. Peck, Camb. and London; V. G. Peckar, Univ. Coll.; E. Pereira, St. George's; A. H. Pirie, Camb. and St. Bart.'s; R. R. Prytherch, Camb. and King's Coll.; J. J. C. Rainsbury, Sheffield; K. S. Ramaswami, Madras and Guy's; Bridget M. Ramsey, Camb. and Royal Free; B. V. Rao, Mysore and London; R. S. Richmond, Camb. and St. Mary's; L. R. J. Rinkel and G. C. D. Roberts, Camb. and St. *Thomas's*; I. G. Robin, Camb. and Guy's; Marjorie C. A. Robson, Camb. and [illegible] Ross, Camb. [illegible] J. F.
[illegible] st.
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[illegible] St. Thomas's; P. G. Stainton,
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Guy's; [illegible]

devising methods of prevention of such respiratory diseases as influenza. Hitherto, in this and other countries the direct verification of the influenza virus has proved impracticable because the effect of the organism, for it cannot be proved experimentally in the absence of any susceptible species of animal. No general method of immunisation is accordingly at present available.

Viscountess Astor: Would it not be wiser not to talk so much about it? (Laughter and Cheers.) Does the Minister not think that it does more harm to talk about it, and would it not be as well to bear in mind that Job said: The thing which I greatly feared is come upon me? (Laughter).

No further answer was given.

Slum Clearance

Mr. Emmott asked the Minister of Health whether the Government's programme for slum clearance was limited to 12,000 houses a year.—Sir E. Hilton Young replied: No, Sir. No limitation of the sort is imposed in the Government's programme for the clearance of slums. It is intended by the concentration of assistance from State subsidies on slum clearance, and by encouraging the more effective administration of the Act of 1930 by the responsible local authorities, to raise the rate of clearance as much as possible, without any arbitrary limitation. The figure of 12,000 houses a year was referred to by me as the estimated number for which, in the light of experience of the working of the Act, it is reasonable to make provision in the estimates for the coming year, which will be the first year of intensified effort to accelerate the rate of clearance. It is expected that after the first year the rate will be increased.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Feb. 13th.—4.30 P.M., UNITED SERVICES. Paper. Major-General J. W. West: The Story of a Small Campaign: the Burma Rebellion of 1931.

TUESDAY.—5 P.M., THERAPEUTICS AND PHARMACOLOGY. Discussion: Iodine Compounds in Thyroid Disease. Openers: Prof. C. R. Harington (the Historical Aspect); Dr. H. Gardiner-Hill (the Clinical Aspect). Other speakers will take part. 8.30 P.M., PSYCHIATRY. Paper. Prof. Millais Culpin: The Occupational Neuroses (including Miners' Nystagmus). Members of the Section of Ophthalmology are specially invited to attend the Meeting.

THURSDAY.—5 P.M., DERMATOLOGY. (Cases at 4 P.M.) 7.45 P.M., NEUROLOGY. A Clinical Meeting will be held at the National Hospital, Queen-square, W.C. 1.

FRIDAY.—5.30 P.M., PHYSICAL MEDICINE. Demonstration. Dr. J. B. Mennell: Manipulative Methods. Members of the Section of Orthopædics are specially invited to attend the Meeting. 8.15 P.M., OBSTETRICS AND GYNÆCOLOGY. Paper. Dr. Elizabeth Hurdon and Dr. Helen Chambers: [illegible] Carcinoma of the Body of the Uter[illegible] logical Specimens. Dr. M. A. [illegible] Endometritis. 2. Sarcoma [illegible] 3. Unruptured Interstitial Tubal Pregnancy. 8.30 P.M., RADIOLOGY. Short reports of cases will be given.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Feb. 13th.—8.30 P.M., Discussion on the Treatment of Peptic Ulcers by Duodenal Feeding, to be introduced by Dr. Ernest Young and Dr. G. R. M. Cordiner.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, Manson House, 26, Portland-place, W.

THURSDAY, Feb. 16th.—8.15 P.M., Prof. J. Gordon Thomson: The Problem of Immunity in Malaria (lantern) preceded by a Demonstration at 7.45 P.M.

PADDINGTON MEDICAL SOCIETY.

TUESDAY, Feb. 14th.—9 P.M. (at Great Western Royal Hotel, Paddington), Dr. E. K. Le Fleming, Dr. A. F. Heald, and Mr. Ernest Ware: Problems of Medical Representation.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FRIDAY, Feb. 17th.—5 P.M. (at 1, Upper Montague-street, Russell-square, W.C.), Diphtheria Immunisation—Its Possibilities and Difficulties. Speakers: Dr. E. H. T. Nash, Dr. J. G. Forbes, Dr. Guy Bousfield, and Dr. R. M. F. Picken.

NORTH LONDON MEDICAL AND CHIRURGICAL SOCIETY.

WEDNESDAY, Feb. 15th.—4.30 P.M. (at St. Mary Islington Hospital), Clinical Demonstration by Dr. W. R. M. Turtle.

BIOCHEMICAL SOCIETY.

FRIDAY, Feb. 17th.—4.30 P.M. (at the Lister Institute, Chelsea Bridge-road, London, S.W.), Communications.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn-fields, W.C.

MONDAY, Feb. 13th.—5 P.M., Mr. P. N. B. Odgers: The Anatomy of the Lumbar and Lumbo-sacral Diarthroidal Joints in Man. (Arris and Gale lecture.)

WEDNESDAY.—5 P.M., Prof. R. J. S. McDowall: Experimental Shock, with special reference to Anæsthesia. (Arris and Gale lecture.)

FRIDAY.—5 P.M., Mr. R. W. Raven: Diverticula of the Pharynx and Œsophagus. (Arris and Gale lecture.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Feb. 13th, to SATURDAY, Feb. 18th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Practical Problems in Medicine and Surgery. Lecture by Dr. H. C. Cameron on Stammering and Bed-wetting in the School-child, Tues., at 4 P.M. (Members and Associates of the Fellowship only.)—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C. Antenatal Demonstration by Dame Louise McIlroy, Frid., at 5 P.M.—ST. JOHN'S HOSPITAL, Leicester-square, W.C. Post-graduate course in Dermatology. Clinical instruction daily at 2 and 6 P.M. Lectures at 5 P.M. on Tues. and Thurs.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. Post-graduate course in Gynæcology. Lectures and operations daily. (Courses open only to Members and Associates of the Fellowship of Medicine.)

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

DAILY.—2 P.M., Operations, Medical and Surgical Out-patients.

MONDAY, Feb. 13th.—10 A.M., Medical Wards, Skin Dept., Surgical Wards. 2 P.M., Eye and Gynæcological Out-patients. 4.15 P.M., Lecture. Dr. Grainger Stewart: Compression Paraplegia.

TUESDAY.—10 A.M., Medical Wards, Surgical Demonstration. 2 P.M., Throat Out-patients. 4.15 P.M., Lecture. Mr. Addison: Urinary Conditions in Children.

WEDNESDAY.—10 A.M., Medical Wards, Children's Medical Out-patients. 2 P.M., Eye Out-patients. 4.45 P.M., Venereal Diseases Demonstration.

THURSDAY.—10 A.M., Neurological Out-patients. Demonstration of Fractures. 2 P.M., Eye and Genito-urinary Out-patients. 4.15 P.M., Lecture. Mr. Edgeley Curnock: Diseases of the Teeth.

FRIDAY.—10 A.M., Skin Out-patients. 12 noon, Lecture on Treatment. 2 P.M., Throat Out-patients. 4.15 P.M., Lecture. Dr. Reginald Ironside: Anæsthesia.

SATURDAY.—10 A.M., Medical and Surgical Wards, Children's Medical Out-patients. The Lectures at 4.15 P.M. are open to all Medical Practitioners without fee.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Feb. 13th, to FRIDAY, Feb. 17th.—2 P.M. and 3.30 P.M., Demonstrations in Out-patients' Department.

UNIVERSITY COLLEGE, Gower-street, W.C.

MONDAY, Feb. 13th.—5 P.M., Mr. H. R. Ing, D.Phil.: Chemical Structure and Pharmacological Action. (First of six free lectures.)

ST. MARK'S HOSPITAL, City-road, E.C.

THURSDAY, Feb. 16th.—4 P.M., Dr. B. Alexander: Colitis.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

MONDAY, Feb. 13th, and following days.—10.30 P.M., Course in methods of examination and diagnosis.

ST. PETER'S HOSPITAL FOR STONE, Henrietta-street, W.C.

WEDNESDAY, Feb. 15th.—3 P.M., Mr. A. H. Harkness: Treatment of Acute Gonorrhœa.

LONDON JEWISH HOSPITAL, Stepney Green, E.

THURSDAY, Feb. 16th.—4 P.M., Mr. S. I. Levy: Enlarged Prostate and its Treatment. Lecture-demonstration.

PRINCESS ELIZABETH OF YORK HOSPITAL FOR CHILDREN, Shadwell, E.

WEDNESDAY, Feb. 15th.—3.30 P.M., Mr. H. P. Winsbury-White and Dr. O. H. Gotch: Medical and Surgical Aspects of Enuresis in Childhood. Lecture-demonstration.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, Feb. 16th.—9 P.M., Mr. John Hunter: Goitre.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Feb. 14th.—5 P.M., Dr. M. Sydney Thomson: Lupus Erythematosus.

THURSDAY.—3 P.M., Dr. I. Muende: Pathology Demonstration.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, Feb. 14th.—3.15 P.M., Dr. P. O. Ellison and Dr. S. McKenzie: Pathological Investigations.

ST. MARY'S HOSPITALS, Manchester.

FRIDAY, Feb. 17th.—4.15 P.M. (at the Whitworth-street West Hospital), Mr. Morley: Some Endocrine Disturbances of Childhood.

ROYAL INSTITUTE OF PUBLIC HEALTH, Queen-square.

WEDNESDAY, Feb. 15th.—4.30 P.M., Miss M. W. Edminson: The Rheumatism Clinic and its Relation to the Social Services.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.

WEDNESDAY, Feb. 15th.—4 P.M., Mr. V. Z. Cope: Demonstration of Surgical Cases.

GLASGOW POST-GRADUATE LECTURES.

TUESDAY, Feb. 14th.—3.30 P.M. (in the Faculty Hall, St. Vincent-street), Dr. A. J. Ballantyne: Interpretation of Ophthalmoscopic Findings.

WEDNESDAY.—4.15 P.M. (at the Royal Infirmary), Mr. J. Patrick: Gynæcological Cases.

British Medical Association

The Sir Charles Hastings lecture will be given on Tuesday, Feb. 21st, at 8 P.M. in the Great Hall of the Association's house, Tavistock-square, London, W.C., when Sir Henry Gauvain will speak on *Sun, Air, and Sea-bathing in Health and Disease.* Lord Dawson will take the chair.

British Institute of Philosophy

Prof. L. P. Jacks, editor of the *Hibbert Journal*, will deliver an address on the *Social Sciences and Philosophy* at University College, Gower-street, London, W.C., at 8.15 P.M., on Tuesday, Feb. 14th. Tickets can be obtained from the director of studies, University Hall, 14 Gordon-square, W.C. 1.

Royal Dental Hospital

Arrangements have been made at this hospital to hold various post-graduate courses on the use of anæsthetics. On Monday, Tuesday, Wednesday, and Friday afternoons from March 6th to the 18th, and again from April 24th to May 6th, two hours of practical instruction will be given daily; and from March 20th to 31st an intensive course consisting of demonstrations in the in-patient department (at Charing Cross Hospital), and daily practical instruction and lectures in the out-patient department (Leicester-square). Further particulars may be had from the dean at the hospital, Leicester-square, London, W.C. 2.

National Hospital, Queen-square

A post-graduate course is now being held at this hospital and will continue until March. Every weekday, except Saturday, there are out-patient clinics at 2 P.M., and lectures and clinical demonstrations at 3.30 P.M. At noon on Wednesdays and Fridays there are demonstrations on the pathology of the nervous system by Dr. J. G. Greenfield, and on Thursdays on the anatomy and physiology of the nervous system by Dr. Macdonald Critchley and Dr. Denny Brown. Mr. L. J. Paton and Mr. T. H. Just are giving demonstrations on neurological ophthalmology and otology at 4.30 P.M. on Mondays and Thursdays. Further particulars may be had from the secretary of the hospital, Queen-square, London, W.C.1.

Harveian Society of London

On Thursday, March 9th, Mr. William Wright, university professor of anatomy at the London Hospital medical college, will deliver the Harveian lecture, on the Anatomy and Physiology of the Central Nervous System; on April 13th Mr. R. Watson Jones, Mr. E. P. Brockman, and Mr. Bryan Burns will open a discussion on Böhler's Influence on the Treatment of Fractures; and on May 11th there will be a discussion on Modern Methods of Treatment of Acute Specific Fevers, introduced by Dr. R. A. O'Brien and Dr. William Gunn. All these meetings will be in the Paddington Town Hall at 8.30 P.M. The Buckston Browne dinner will be held on June 8th at the Star and Garter Home, Richmond, Surrey, and there will be a reception at Down House, Downe, Kent, on July 20th, at 3.15 P.M., when Sir Buckston Browne will give an address on Charles Darwin.

National Council for Mental Hygiene

A series of lecture-discussions on Mental Hygiene in Everyday Life will be delivered in the lecture-room of the Medical Society of London, 11, Chandos-street, Cavendish-square, London, W., on Wednesdays at 5.30 P.M. Dr. J. A. Hadfield will speak on Anxiety (March 1st); Dr. E. A. Bennett on Confidence (8th); Dr. George Somerville on Superstition (15th); Dr. John Rickman on Ambition (22nd); Mr. C. W. Kimmins, D.Sc., on Adaptability (29th); and Dr. E. A. Hamilton-Pearson on Discipline (April 5th). Tickets may be obtained from the secretary of the Council, 78, Chandos House, Palmer-street, London, S.W., or at the lecture.

Joint Tuberculosis Council

After a meeting of the Council on Jan. 21st the members were entertained to lunch at the Hotel Russell by Dr. Lissant Cox, the chairman. The guests included Dr. A. B. Howitt, M.P., secretary of the Parliamentary Medical Committee, Sir Henry Jackson, M.P., Dr. W. J. O'Donovan, M.P., Mr. G. S. Elliston, M.P., Dr. Charles Porter, and Mr. Lewis Elliston. Dr. Lissant Cox proposed the health of the Guests and Dr. Howitt replied, praising the coördinating work of the Council. Dr. O'Donovan proposed the health of the Council, and Dr. Ernest Ward, in his reply, stressed the disgrace to our profession of the continued mortality and crippledom caused by tuberculosis of bovine origin. He advocated the boiling of milk before use in each individual household. Mr. G. S. Elliston then proposed thanks to Dr. Lissant Cox as host, and praised the work of the chairman and the hon. secretary, Dr. Ward. The vote was seconded by Dr. Jane Walker, and Dr. Lissant Cox replied.

Pharmaceutical Society of Great Britain

At a meeting of this society, to be held at 17, Bloomsbury-square, London, W.C., at 8.30 P.M. on Tuesday, Feb. 14th, Dr. J. A. Gunn, professor of pharmacology in the University of Oxford, will give a lecture on the Search for New Remedies.

Paddington Medical Society

The next meeting of this society will be held on Tuesday, Feb. 14th, at the Great Western Hotel, Paddington, at 9 P.M., when a discussion will take place on Problems of Medical Representation. Dr. E. K. Le Fleming, a direct representative on the General Medical Council, Dr. A. F. Heald, organising and assistant medical secretary of the London panel committee, and Mr. Ernest Ware, president of the Society of Members of the Royal College of Surgeons, will be the openers. Visitors are invited.

Fellowship of Medicine and Post-Graduate Medical Association

Dr. H. C. Cameron will lecture on Stammering and Bed wetting in the School-child in the series on practical problems in medicine and surgery at 4 P.M. at 11, Chandos-street, Cavendish-square, London, W., on Tuesday, Feb. 14th. Three courses will begin on Feb. 20th: an evening course of clinical and pathological demonstrations at the National Temperance Hospital on Mondays and Fridays, which will be limited to 16; a fortnight's course in medicine, surgery, and the specialties at the Prince of Wales's Hospital, Tottenham; and a practical pathology class at the Hospital for Consumption, Brompton, on two days a week from 11.30 A.M. to 1 P.M., which will be limited to six. Other forthcoming courses include a course in medicine, surgery, and gynæcology at the Royal Waterloo Hospital, March 6th to 25th; a course in orthopædics at the Royal National Orthopædic Hospital, March 6th to 18th; and an evening course in rheumatism at the British Red Cross Clinic on Tuesdays and Thursdays from March 7th to 23rd.

Royal Institute of Public Health

In July of last year the Royal Institute of Public Health moved into its new building in Queen-square, London, and on Feb. 7th a reception was held, at which Lady Leverhulme acted as hostess, in order that friends of the institute might have the opportunity of admiring the new premises. These have been built in an unpretentious and dignified style, and consist of four stories and a basement. The board room and administrative offices are on the ground floor. On the first floor is the chemistry department, where samples of several foodstuffs sent up for analysis were on view. A laboratory is set aside for the use of students in training for the diploma in public health, and is large enough to accommodate some 20 students at a time. The institute coöperates with official bodies in dealing with the problems of pure water- and milk-supplies, and epidemic diseases such as diphtheria and typhoid, and undertakes the bacteriological examination of water, sewage, food, and other materials such as the dyes used for fur. The laboratories are recognised as a place for research in connexion with the Beit Memorial Fellowships, and the institute encourages medical practitioners and others to make use of its facilities for original research, whether in preventive medicine, bacteriology, epidemiology and immunology, the analysis of foodstuffs, or other allied subjects.

PARLIAMENT

NOTES ON CURRENT TOPICS

Reassembly of Parliament

BOTH Houses of Parliament reassembled after the Christmas recess on Tuesday, Feb. 7th.

HOUSE OF COMMONS

TUESDAY, FEB. 7TH

Influenza Research

Sir WILLIAM DAVISON asked the Minister of Health whether any organised research was being conducted by or at the instance of his Department with a view to ascertaining the primary cause of influenza, and methods for its prevention, in view of the serious effects on the health and industry of the nation caused by recurring epidemics of that disease.—Sir E. HILTON YOUNG (Minister of Health) replied: Investigation into the virus diseases, of which influenza is believed to be one, is continually in progress at the National Institute for Medical Research. A special inquiry subsidised by my Department is also being made into the bacteria of the nose and throat with a view to

ADDRESSES AND ORIGINAL ARTICLES

THE PROGNOSIS AND TREATMENT OF LOBAR PNEUMONIA*

By John A. Ryle, M.D., F.R.C.P. Lond.
PHYSICIAN TO GUY'S HOSPITAL

There are circumstances which compel a new review of the old and familiar diseases. As a rule we find that their clinical portraiture leaves little room for improvement. From time to time, however, research adds novelty or precision to our ideas of cause or points the way to a new therapy. Among the acute diseases lobar pneumonia maintains a high incidence through the generations, and there is no present sign that preventive medicine will make it rare as typhoid fever has been made rare. It remains an important cause of anxiety and mortality in every practice. Of its ætiology, its clinical features and course, and its immediate and remote dangers there is a general appreciation. Many views on therapeutic detail have been voiced and many supposedly specific remedies have been vaunted, but the general principles of management are firmly established. Fraenkel's discovery of the causal pneumococcus in 1884 gave the disease its status as an acute specific fever, but led to no revolution in treatment. More recent work has resulted in the recognition of three main types of pneumococcus and of a fourth heterogeneous group of organisms all capable of causing lobar consolidation of the lung. It has been shown in what proportion these different types are responsible for the disease and how they vary in their individual virulence. The latest outcome of these discoveries is the preparation of protective sera, and notably of Felton's concentrated serum, which is shown to have a certain degree of potency in combating infection with pneumococcus Types I. and II.

While serum therapy in pneumonia may still be said to be on trial enough has been published to set us thinking and to provide those of us who practise with some difficult problems in judgment. These may be briefly stated as follows. We need to know how far it is now incumbent upon us to consider the employment of serum in lobar pneumonia as a routine, or if this is not warranted, how we should select the cases to be so treated. Recognising that the method calls for experience and considerable technical skill we also need to know whether cases can be adequately handled in the home and, if not, whether they ought to be moved to hospital in face of the belief that, given good conditions, the avoidance of such a transfer generally provides a better prospect of recovery.

It is a main purpose of this communication to seek an answer to these questions. My personal experience of serum therapy in pneumonia is negligible, but I have long been interested in the natural history of the disease, and it was my good fortune to be a participant in the discussion on serum treatment at the summer meeting of the British Medical Association. I have also had the pleasure of meeting several of the leading British and American investigators and of serving on committees which are closely concerned with the problem.

There have been discoveries in the scientific treatment of disease in recent years which have been promptly accepted and universally applied, so apparent and remarkable were their achievements. Of such are insulin in diabetes and liver treatment in pernicious anæmia. The antipneumococcal sera, also due to careful scientific studies, are, however, in a different category and for various reasons have produced no such dramatic change in practice. They demand special care and experience for their administration; their preparation is costly; they show a limited specificity; it is very difficult to assess the several causes of symptoms and mortality in the disease which they are intended to benefit; and, finally, this disease has already a high natural recovery-rate. We are not entitled to conclude from this that sera will find no established place in our therapeutic armoury. Rather should we seek to determine the scope and limits of their utility.

Now we cannot discuss the merits of a new remedy unless we have a just appreciation of the natural morbidity and mortality of the disease which it is purported to relieve or cure. For this reason I must ask attention first of all to the difficult matter of prognosis in pneumonia—that is to say, of pneumonia when left to nature and the nurse. Thereafter, having briefly reviewed the contributions of non-specific therapy and the methods and results of serum therapy, I shall attempt an estimate of the extent to which we should be prepared to modify practice on the basis of the newer knowledge.

Mortality and Prognosis

As has been implied, we cannot claim that we are able to reduce the mortality or alter the morbidity of a disease until we know what its mortality and morbidity are. When, as in the case of pneumonia, these vary in some degree from year to year, very considerably from country to country, and markedly so in respect of age-incidence, social environment, individual constitutional factors, and the type of invading organism, our difficulties become very complex. Both the prevalence and mortality of pneumonia in the United States, where the bulk of the work on serum therapy has been done, are more serious than in this country and to some extent our conclusions must be drawn anew.

At present we have hospital figures in England and Scotland which show that the mortality of lobar pneumonia lies somewhere between 10 and 20 per cent. Dr. R. J. Waterfield (personal communication), investigating the figures at Guy's Hospital over a nine-year period ending in 1930 found a total mortality of 16 per cent. between the ages of 13 and 75 years. One-third of the deaths occurred over the age of 50. There were no deaths between the ages of 15 and 20. We have no exact figures as to the mortality of patients treated in their homes, and I imagine that many more patients in this country are treated in their homes than in hospital. As the graver cases and the poorer cases tend to find their way to hospital and as the act of removal is often undertaken rather late in the disease and is not always beneficial to the patient, it would be reasonable to expect a lower mortality among patients treated at home. A death-rate in the neighbourhood of 10 per cent. is suggested by general practitioners of wide experience. The mortality from lobar pneumonia among the troops at Aldershot during the war was shown by Abrahams [1] to be as low as 10·5 per cent. Here the patients were mostly picked men of military age, and it is probable that they were moved to hospital in the earliest stage of the disease. At a base hospital in France obliquely and the lower end brought to the surface; the pharynx was divided above the growth and the œsophagus below it, the cut end of the œsophagus being ligatured. The wound was closed except for the lower inch, and convalescence was uneventful; later, the lower inch of the opening was sewn up and the incision extended upwards. An attempt was made to cover the wound by a small celluloid cup connected with the gastrostomy opening by a tube, but the arrangement did not work well. Later the pharyngeal opening was closed, and a new one made immediately below the hyoid bone. Through this, the short end of a rubber empyema tube was passed, kept in position by tapes encircling the neck, and tied to the holes in the flanges of the tube; the long end was connected with the gastrostomy tube. This apparatus was a success, and was subsequently replaced by a curved rubber tube with a flange, connected by rubber tubing with another tube with a flange which fits the gastrostomy opening. The patient married less than a year after the first operation, and now, 23 years afterwards, is in good health and leads an active life.

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* An address given to the West Herts and Watford Medical Society on Feb. 15th.

CLEAN FOOD FACTORIES

About 400 people attended a meeting held in London on Jan. 20th, jointly by the Royal Sanitary Institute and the food group of the Society of Chemical Industry, to discuss Factory Cleanliness in the Food Industry. Mr. E. B. Hughes, of Messrs. Lyons, laid it down that food factories should be planned as such from the outset, to facilitate handling of food, and to secure cleanliness by non-absorbent surfaces and good lighting. To avoid infestation there should be no harbourage for insects or other pests. Antiseptics to be used sparingly, though they were essential. Washing was very important. He instanced the cleaning of rotary curved knives used in cutting up meat; these, when dismounted, are first washed and wiped, then washed again with soft soap and hypochlorite solution, and finally wiped dry with a clean cloth. Inspectors and visitors are useful in the factory, though apt to be an annoyance to a young manager. Dr. Thomas Carnwath spoke of the way in which cleanliness reduced the dangers of keeping foods. Lieut.-Colonel G. Leighton emphasised the need for cleanliness not only of the works but of the workers. Sir Weldon Dalrymple-Champneys considered it most important that the methods of cleanliness should be understood by the workers so they could at once readjust their methods when an interruption of the factory routine had suddenly occurred. Dr. Naylor Barlow, medical officer of health for Wallasey, said it was intolerable that a food factory should be fitted into an old five-storey building with dark corners and soft wood floors, and asked for a limit on the relabelling of food preparations by retailers.

On the following day a party was taken over the laboratories of Messrs. Lyons in the Hammersmith-road, London.

Appointments

Brailsford, James F., M.D., Ch.B. Birm., has been appointed Radiological Demonstrator in Living Anatomy in the University of Birmingham.

Mower White, Ann, L.R.C.P. Lond., M.R.C.S. First Assistant, Children's Department, University College Hospital.

Trafford, H., L.R.C.P. Lond., M.R.C.S., Certifying Surgeon under the Factory and Workshop Acts for Warlingham, Surrey.

Vacancies

For further information refer to the advertisement columns

All Saints' Hospital, Austral-street, West-square, St. George's-road, S.E.—Res. H.S. At rate of £100.

Birkenhead General Hospital.—Hon. Orthopædic Surgeon. Res. Sen. H.S. At rate of £150. Also Second H.S., H.P., and Cas. O. Each at rate of £100.

Blackburn Royal Infirmary.—4th H.S. £150.

Bootle General Hospital.—H.P., Two H.S.'s, and Cas. O. All at rate of £150.

Bristol General Hospital.—Hon. Physician.

Burnley, Victoria Hospital.—H.P. At rate of £150.

Cambridge, Papworth Village Settlement.—3rd Asst. M.O. £300 Also H.P. At rate of £150.

Cardiff City Mental Hospital, Whitchurch.—Sen. Asst. M.O. £570.

Carlisle, Cumberland Infirmary.—H.S. At rate of £175. Also H.P., 2nd H.S., and H.S. to Spec. Depts. Each at rate of £155.

Carmarthen, Joint Counties Mental Hospital.—Med. Supt. £800.

Chester, East Lancashire Tuberculosis Colony, Gt. Barrow.—Asst. M.O. At rate of £275.

City of London Maternity Hospital, City-road, E.C.—Asst. Res. M.O. At rate of £80.

Derby County Mental Hospital, Mickleover.—Deputy Med. Supt. £600.

Dudley, Guest Hospital.—Asst. H.S. £170.

East Ham Memorial Hospital, Shrewsbury-road, E.—Hon. Surg. to Ear, Nose, and Throat Dept. Also Res. M.O. At rate of £200.

Hackney Hospital, High-street, Homerton, E.—Res. Asst. M.O. £350.

[illegible] *-West London Hospital, Haverstock-* [illegible] for Out-patient Dept. At rate of [illegible]

Harrogate, Royal Bath Hospital.—Res. M.O. At rate of £150.

Hillingdon County Hospital.—Res. Asst. M.O. £400.

Hospital for Sick Children, Gt. Ormond-street, W.C.—H.P. and H.S. Each at rate of £100.

Ilford, King George Hospital.—H.S. At rate of £100.

Larbert, Royal Scottish National Institution.—Asst. M.O. £350.

Leigh Infirmary, Lancs.—Res. H.S. At rate of £175.

London Lock Hospital, 91, Dean-street, W.—Res. M.O. At rate of £175.

Manchester, Ancoats Hospital.—Hon. Asst. Phys.

Manchester Babies Hospital, Burnage-lane, Levenshulme.—Jun. Res. M.O. At rate of £50.

Manchester, Christie Hospital and Holt Radium Institute.—Res. M.O. £150.

Manchester, Crumpsall Hospital and Institution.—Med. Supt £1200.

Northwood, Mount Vernon Hospital.—H.S. At rate of £150.

Norwich Infirmary.—Res. Asst. M.O. £480.

Nottingham General Hospital.—H.S. At rate of £150.

Paddington Green Children's Hospital, W.—Hon. Surg. to Ear, Nose, and Throat Dept.

Preston and County of Lancaster Royal Infirmary.—H.S. and Cas. O. £150.

Prince of Wales's General Hospital, N.—Res. Sen. and Jun. H.P.'s and H.S.'s. At rate of £120 and [illegible]

Princess Elizabeth of York Hospital for [illegible] H.S. At rate of £125.

Royal Air Force Medical Service.—Medical Officers.

St. Alfege's Hospital, Vanbrugh-hill, S.E.—Res. Asst. M.O. £350.

St. Giles' Hospital, Brunswick-square, Camberwell, S.E.—Res. Asst. M.O. £350.

St. Mary Abbot's Hospital, Marloes-road, Kensington, W.—Temp. Asst. M.O. At rate of £250.

St. Mary Islington Hospital, Highgate-hill, N.—Res. Asst. M.O. £350.

Staunton-on-Wye, Herefordshire, Jarvis Charity.—Res. M.O. £150.

Sunderland, Royal Infirmary.—Sen. H.S. £200.

West London Hospital, Hammersmith-road, W.—Asst. Phys. for Diseases of Children.

West Riding of Yorkshire C.C.—School Medical Inspector. £500.

Westmorland County Hospital, Kendal.—H.S. At rate of £200.

Weston-super-Mare General Hospital.—Res. H.S. £150.

Winchester, Royal Hampshire County Hospital.—H.S. At rate of £125.

Windsor, King Edward VII. Hospital.—Res. M.O. £200.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Bromley (Kent).

Births, Marriages, and Deaths

BIRTHS

Avery.—On Feb. 3rd, the wife of Harris Avery, M.B., of Selsdon-road, West Norwood, of a son.

Davey.—On Feb. 2nd, at Rockleigh, Gloucester, the wife of Dr. E. N. Davey, of a daughter.

DEATHS

Bell.—On Jan. 31st, Squadron Leader Robert Ernest Bell, M.B., B.Ch., R.A.F. (retired), as the result of an accident.

Eichholz.—On Feb. 6th, at North End House, W., Alfred Eichholz, C.B.E., M.D., aged 63.

Dell.—On Feb. 1st, at The Slade House, Stroud, Charles Mackintosh Dell, M.R.C.S., L.R.C.P., aged 27.

Hallett.—On Feb. 5th, at Long Wittenham, Frederic Greville Hallett, Knight, O.B.E., sometime Secretary of [illegible] England and of the the Conj[illegible] Imperial [illegible]

Kerr.—On J[illegible] Hove, Squadron Leader George Douglas Kerr, M.R.C.S., L.R.C.P. Lond., late R.A.F., aged 70 years.

Lewis.—On Jan. 29th, 1933, at 5, Sketty-road, Swansea, Rhys T. Lewis, M.D. Lond., aged 38 years.

Oppenheimer.—On Jan. 31st, at Nice, France, Heinrich Oppenheimer, M.D., LL.D., Ph.D., Lit.D., late of College-crescent, N.W., in his 64th year.

Stephenson.—On Feb. 2nd, at Orsett-terrace, W., John Stephenson, Lieut.-Colonel, I.M.S. (retired), C.I.E., F.R.C.S., F.R.S.

Wemyss.—On Feb. 3rd, at Moray-place, Edinburgh, Herbert Lindesay Watson Wemyss, M.D., F.R.C.P.E.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

toxic. The procedure, quoting Cecil verbatim, is as follows :—

> "The patient is first questioned as to previous injections of horse serum, and as to history of hay-fever, asthma, or hives. An intradermal and a conjunctival test are then made with a 1 in 10 dilution of normal horse serum. If after 15 minutes these tests are both negative, 5 c.cm. of Felton's serum are slowly injected intravenously. If the patient shows no reaction to this first injection of serum, a second of 15 to 20 c.cm. is given intravenously from one to two hours later, and this dose is repeated every two to three hours until the patient has received approximately 100,000 units (equivalent usually to about 100 c.cm. of serum). The amount of serum administered on the following day is determined by the clinical condition of the patient. If his condition has improved and if his chart shows a decided drop in temperature, pulse-rate, and respiration-rate, the amount of serum administered is approximately one-half of that administered on the first day. If, on the other hand, the patient's condition is worse, or if it remains unchanged, the intensive treatment is continued. On the third day the same policy is pursued. If the patient's temperature is under 100° F., and if his condition is good, the general rule is to give one or possibly two 10 c.cm. injections to prevent relapse. We have found from experience that if any benefit is to result from serum treatment it is usually apparent after two or at least three days of treatment."

The difficulties and anxiety attending such a programme outside hospital require no emphasis. Even spacing out the injections to eight hours and giving larger quantities does not greatly simplify, and serum reactions, which are a genuine cause of apprehension, have not been wholly eliminated.

Treating alternate cases without preliminary typing, Cecil obtained a reduction of mortality from 36 per cent. to 28 per cent. in groups of cases numbering respectively 422 and 429. A reduction in the same ratio (provided all cases were seen early enough and considered suitable for serum) would convert the 16 per cent. Guy's Hospital mortality to 12 per cent., and the private practice 10 per cent., say, to 8 per cent.

Approximately two-thirds of all cases of lobar pneumonia are due to Types I. and II., and approximately one-third are due to Type I. infections. The mortality in Type I. cases has been reduced from 31·2 to 20·1 (Cecil) and from 30·9 to 16·6 per cent. (combined results of various investigators quoted by Cecil). In Type II.—the most virulent type—the results are less good, a reduction from 45·8 to 40·5 per cent. only being reported (Cecil), and from 37·7 to 24·6 per cent. (other investigators quoted by Cecil). The earlier treatment is instituted the better are the results. Cecil reports a reduction in mortality from 26·8 to 11·7 per cent. in Type I. cases treated within 72 hours of onset. I have seen no figures thus far which suggest that the incidence of complications such as empyema is influenced by serum therapy. Armstrong and Johnson [4] also state that complications and sequelæ are apparently uninfluenced by serum. The results obtained by the Scottish [5] and English [4] investigators, although their studies so far have been on a smaller scale, support the contentions of Cecil. All observers are agreed that there is an appreciable reduction in mortality and that early defervescence is more frequent among cases treated with serum. Similar claims, it is true, have previously been made on behalf of vaccine treatment and certain forms of drug therapy, but no such carefully controlled studies have been reported by their advocates. An unexpectedly early defervescence may also occur without specific therapy but hardly, perhaps, with the frequency observed in serum-treated cases. Finally, there is evidence for the specificity of Felton's serum in that the mortality of Type III. and Type IV. infections is not appreciably influenced by it. In other words, improvement depends upon something more than a "protein-shock" effect. Criticisms of the methods of control employed in the reported series could easily be advanced, for adequate controls in large scale human experiments of this kind are difficult to come by. Thus in the "alternate case" method it is clear that an accidental preponderance of cases of more favourable age and constitution in the treated group would lower the mortality appreciably. However, the factors influencing the liability to death or recovery in pneumonia are so numerous that precise analysis is impossible, and when various groups of reliable workers find essential agreement their opinions must be held worthy of acceptance.

Practical Difficulties of Serum Treatment

(1) These are firstly encountered in connexion with diagnosis, and particularly with diagnosis at a suitably early date. The doctor is not always called at the onset of the disease and two or three days must frequently elapse before he appears on the scene or before the diagnosis is certain. Typing requires a further 12 to 24 hours, even if a competent laboratory service be close at hand. Not all lobar pneumonias are pneumococcal and, although an abrupt onset, high fever, and rusty sputum are generally accurate tale-bearers, there are cases in which the differentiation of a pneumococcal from an "influenzal" or streptococcal pneumonia or a "mixed" broncho-pneumonia is none too easy. In recent years other types of pneumonia have been more common and pneumococcal pneumonia less common than formerly. Massive collapse in association with bronchitis, a comparatively benign condition, may also be mistaken for pneumonia.

(2) Even allowing that an early diagnosis is achieved and the case thought suitable for serum the necessary preliminaries and the frequent administrations of serum by the intravenous route must needs provide the busy practitioner with very real embarrassment. They may also be disturbing, both physically and mentally, to patients for whom we normally advocate the minimum of disturbance.

(3) In the case of a poor patient it must be decided whether to rely upon conservative treatment at home or to risk removal to a hospital where serum treatment can be instituted if the infection prove to be of appropriate type.

While grateful for new knowledge we must confess that it can greatly complicate judgment and practice. We would none of us willingly withhold a curative agent in an anxious disease, but while we know that there is, broadly speaking, a 4 to 1 prospect of spontaneous recovery and a 1 in 3 chance that the infection is of inappropriate type we may feel a pardonable disinclination to burden a patient with repeated doses of an intravenous remedy for an indeterminate advantage. On the other hand, we cannot put it from our minds that a certain small percentage of otherwise doomed cases may have the balance tipped in their favour by serum.

As an example of the judicial difficulties which may be encountered let me quote the case of a friend and colleague to whom I was called the day after hearing the arguments in favour of serum therapy set forth by its chief exponents.

> The patient's age was 63; his life had been healthy and hardworking. On July 23rd he felt chilly and unwell. The next day he remained at work still feeling unfit. On the 25th he felt well again. On the 26th he had a rigor while out in his car, and that night his temperature was 102°. I saw him on the evening of the 28th—i.e., the second day from the rigor and the fifth from his first symptoms of infection—and found signs of pneumonia at the right apex and at the right root behind. Respirations 30. Pulse 108. General condition good. Leucocyte count 25,000 cells per c.mm. A small specimen of rusty sputum

Malloch and Rhea [2] found a general mortality of 26·1 per cent., with a higher rate among those coming long distances by convoy or hospital train than among base details. Cecil,[3] in the United States, reports that the death-rate of pneumococcal pneumonia varies considerably with the class of patient studied, being lowest in private practice, somewhat higher in the hospitals of the better class, and highest in the large hospitals draining the slum areas. Thus the mortality at the Rockefeller Hospital is 19·5 per cent. and at the Bellevue Hospital 35·8 per cent. Among 422 cases (all types) untreated with serum Cecil found a mortality of nearly 36 per cent. Among 429 cases (all types) treated with serum there was a mortality of 28 per cent. Even this lower figure approaches twice the Guy's Hospital figure. It is clear that pneumonia is a more serious menace in the United States than in the British Isles.

Turning to morbidity in hospital cases Dr. Waterfield finds that approximately 90 per cent. of the cases which recover do so without disability, so that there is no overwhelming argument in favour of an additional therapy on this score, even though it be shown that serum is capable of producing an earlier defervescence.

Leaving statistical data let us next consider the factors which are commonly accepted as influencing prognosis in the individual. So far we have recognised that youth and good environment are favourable and that poor conditions and advancing years are unfavourable. Other prognostic indications have been repeatedly observed at the bed-side. The presence of a chronic disease or of alcoholism weights the scales heavily against recovery. Cyanosis is adverse, delirium by no means necessarily so. Wide extent of lung involvement, although frequently, is not always of bad import. A low and particularly a falling blood pressure gives cause for concern. The pulse-temperature-respiration ratio affords valuable guidance; while parallelism is maintained or pulse- and respiration-rate are slow in proportion to the temperature hopes are good, but if pulse- and respiration-rate rise unduly while the temperature swings or falls, there is cause for grave anxiety. A clean tongue and nourishment well taken are encouraging. A good leucocytic response, in the neighbourhood of 20,000 cells per c.mm., has always been accounted favourable, and a complete absence of leucocytosis as very unfavourable. Intermediate figures must be balanced with the clinical findings. The pneumococcus may be grown from the blood stream in the early stages of pneumonia in a certain proportion of cases. A profuse growth or persisting positive blood cultures as the disease advances are now known to be very adverse. Pericarditis and meningitis, other expressions of the septicæmic state, usually foretell a fatal termination. Pneumococcal peritonitis has its special incidence in childhood and may occur with or without evident pneumonia; the death-rate is high but recoveries occur.

It will be generally agreed that prognosis is most difficult during the first three days of the disease—the very stage in which additional help, if required, should be given. Nothing would give a greater impetus to the employment of serum therapy than the establishment of prognostic criteria which would separate at an early stage the 15 or 20 per cent. of cases with an otherwise hopeless prognosis from the 80 or 85 per cent. destined to recover spontaneously. At present reliance must be placed upon clinical judgment of the patient's constitution and reserves and of the extent of the infection combined with a routine leucocyte count, but we must acknowledge that appearances can be deceptive. We have all seen the "apparently hopeless" case recover, and the "apparently favourable" case succumb.

The Essentials of Non-specific Therapy

Although it cannot be quantitatively expressed it is not to be doubted that symptomatic treatment helps recovery, and that good or bad treatment may make the difference between life and death. A warm but fresh and well-ventilated room and a good nurse are probably to be accounted of greater value to the patient than all other measures combined. The nurse's mission is to secure the maximum of rest and sleep with the minimum of interference; to supply adequate light nourishment; to attend to the mouth and skin without unnecessary movement or fatigue; to limit the visits of relatives; accurately to keep those records which are of such importance to the physician as indices of progress or deterioration; to preserve optimism; and to administer oxygen and certain drugs at appropriate times. A fussy nurse, too insistent on professional detail or appearances, or too partial to heated rooms and the pneumonia jacket, can do as much harm as her wiser colleague can do good. While most patients are happier propped high with extra pillows, individual requirements vary and the elevation can be overdone. Occasional tepid sponging is a part of the routine. A fluid or semi-fluid diet with fruit-juices and plentiful drinks and additional sugar or glucose is usually the best. Stimulants can frequently be dispensed with altogether if adequate fluid and sugar are taken, or alternatively may be reserved for the anxious days before the crisis. Hypodermic stimulants such as strychnine and adrenaline are, to my mind, of dubious value. They are often given rather at the dictation of anxiety than of necessity, and if they produce a physiological response on the part of the heart or blood-pressure is it not rather by dint of "flogging the tired horse" and too transitory in its effect to be a real boon? Digitalis is commonly given although it is still doubtful whether it has any virtue in the case of a regular tachycardia and embarrassed function due to fever and toxæmia. Brandy is a food as well as a stimulant and its utility in certain cases and stages is generally approved. Oxygen, preferably given continuously through a nasal catheter, is obviously justified in the presence of cyanosis. For sleep, when pain is slight or absent, Dover's powder with aspirin may be enough for some patients and in small doses is a useful combination in the case of children. Morphine should never be withheld during the earlier stages in the adult case where sleeplessness and pain are prominent complaints. One quarter of a grain should be the dose, a sixth being too frequently disappointing in its effect. A light flannel jacket or shawl over nightdress or pyjamas is sufficient covering. Heavy poultices, thick or tightly fitting vests and pneumonia jackets are to be avoided, but a light linseed or antiphlogistin poultice is grateful in the presence of pleuritic pain. So far as is consistent with careful observation the patient should be spared repeated examinations of the chest.

The Method and Results of Serum Therapy

These have been ably summarised by Cecil.[3] The method is based upon successful protective experiments with artificially infected monkeys. Felton's serum has the double advantage over previous preparations of being concentrated, so that smaller quantities can be given at a time, and of being less indistinguishable from them may be the result of Mikulicz's disease.

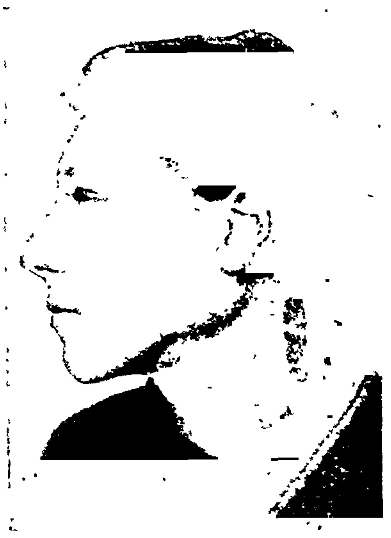
CLINICAL FEATURES

Of the 19 patients in the present series no fewer than 16 were women; the average age at onset was 29, with 11 and 53 as extreme limits; and the average duration of the disease was nine years. In 9 cases the condition affected one parotid gland, in 9 cases both parotid glands, whilst in the remaining case the pathological process had started in both submaxillary glands and later spread to both parotids.

A few of the patients dated the onset of the condition to an acute dental infection or a dental extraction, to an acute infection of the upper respiratory tract, or to some other acute illness; but in most of the cases no such suggestive ætiological factor was put forward. In one case, a boy of 11, the condition followed an acute suppurative parotitis which had necessitated surgical drainage.

The disease usually begins insidiously with an occasional feeling of fullness in one parotid region. This soon gives way to a slight swelling of one parotid, associated with a feeling of still greater tension in the gland. Some patients have noted a tendency for the attacks to be started off by a meal, in which case the parotid swelling may reach a considerable size during the course of an hour or so, whilst in other cases there has been a tendency for very acid foods to start the attack. The gland may take anything from an hour or two to reach its maximum size, though as a rule this is reached in the course of about 24 hours. The swelling then persists for a variable period, sometimes tending to subside at the end of 48 hours, and sometimes lasting as long as six weeks. In a few cases the actual resolution of the attack is accompanied by the passage into the mouth—through the duct of the affected gland—of pus, or more often muco-pus, with a foul taste.

FIG. A



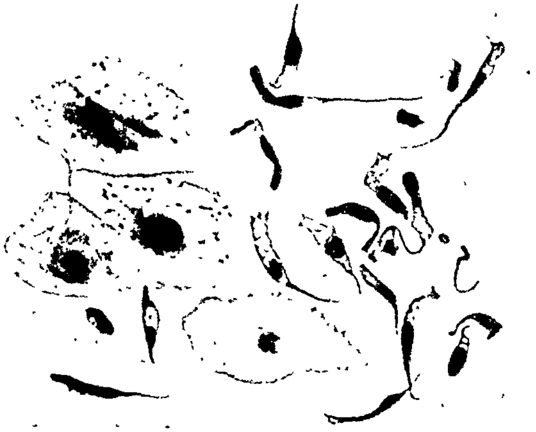
A patient with recurrent parotitis.

Between the attacks many patients are entirely free from symptoms; others complain of constant dull pain in the parotid region, whilst a few have persistent severe pain. Though, as mentioned above, an acute attack occasionally starts during a meal, it is unusual, between attacks, for these patients to suffer inconvenience during eating. A few of them learn in time how to avoid these more acute attacks by means of massage of the parotid; and this will be discussed later. The frequency of the acute attacks varies from one a year to one about every month.

With the passage of time there is an undoubted tendency for the other salivary glands to be involved in similar processes, and though in the present series unilateral parotid involvement was the rule at onset, in 9 cases the condition became bilateral, whilst in the case starting in the submaxillary glands the parotids were also eventually involved.

The sex-distribution of the condition is interesting; if the one post-operative case in the boy of 11 is omitted as not being a true "primary" case, then the ratio of females to males is eight to one. Many of the women patients showed a remarkable facial similarity, in the rather narrow and elongated type of head, in their sallow complexions, and in their general asthenic habitus. (Fig. A.) As a group they showed considerable nervous instability; several were inclined to outbursts of tearfulness, one was contemplating suicide, and one had a very severe form of mucous colitis. When one remembers the part played by the cranial autonomic system in the physiology of salivary secretion, it seems possible that these facts have a bearing on the disease.

FIG. B



The cells found in a catheter specimen of saliva during the quiescent stage.

PHYSICAL SIGNS

It is necessary to consider the physical signs both during the quiescent periods and during the actual acute attacks. In the quiescent phase there may or there may not be visible fullness of the parotid region; this usually depends upon the duration of the disease, for the longer it has lasted the more certainly will a swelling be apparent. All cases, however, reveal on palpation some enlargement of the affected gland. In the normal parotid the exact anatomical limits of the gland are very hard to define on palpation, but in glands affected with recurrent parotitis the margins are always well-defined and rounded; the normal anatomical limits are not overstepped, but the gland consistence is firmer than usual, and there is slight diffuse tenderness. These are the characteristic physical signs, but in some cases, where the pathological process affects only one lobule of the gland, the changes may be confined to this, whilst in others of more chronic type, which have lasted many years, there may be areas in the parotid of a more local or lobular type of enlargement with variations in consistence. On the other hand, there may be diffuse enlargement of doughy consistence. Bidigitally there is at times was obtained. An attempt to type the pneumococcus by Armstrong's[6] direct method was unsuccessful, but the next morning it was reported as Type I.

On July 29th there was considerable restlessness with delirium, and enough cyanosis to justify continuous oxygen at night. On the 30th the left upper and lower lobes became involved. On the 31st he looked distinctly worse. Respirations 30–36. Pulse 110, with frequent intermissions. Breathing was embarrassed by meteorism, which was relieved by pituitrin and a turpentine enema. There was also severe pleuritic pain below the left nipple. By August 2nd (the seventh day after the rigor) the temperature had fallen to 99·6°; the respirations to 24, and the pulse-rate to 92. After steady improvement for a fortnight he began to get up, but then developed a dry pleurisy first at the right and then at the left base without any serious rise in temperature, and with a leucocyte count of only 9000. The pleurisy took some weeks to clear, but the case gave us no further anxiety.

Here were some of the difficulties. Should I regard the day on which the typing was complete as the third or the sixth day of infection? Accepting it as the third day, should I be influenced by the patient's age and the knowledge that he had a Type I. infection and give him serum? Or knowing him to be abstemious and of sound constitution, and comforted by the good leucocytosis, should I rely on the old expectant measures? I chose the latter course, not without heart searchings, but in the event justifiably. In two other cases which ended fatally I have criticised myself afterwards for witholding serum, although at the time I had reasons for my conservatism.

Conclusions

It remains to attempt advice in practical form. At present no unalterable rules can be laid down with regard to the indications for serum in lobar pneumonia. As in all therapeutic decisions the final plan must be based upon the particular state and requirements of the individual patient. The method is clearly, and (unless it can be simplified) must remain, more suited to hospital than home conditions. It is contra-indicated in children and adolescents for the most part, since the natural recovery-rate is so high in this age-period. It may reasonably be decided to dispense with it in advanced age when interference is ill-tolerated, and the disease frequently provides a blessed escape from infirmities. I should personally hesitate to employ it in any subject with known allergic tendencies, for I am doubtful whether the ill-effects of serum shock at the beginning or of serum sickness at the end of a pneumonia would be proportionately counterbalanced by the benefits of the treatment. In previously healthy adults showing a good initial response to infection and a high leucocytosis, I should feel justified in withholding serum. We are thus left with adult cases giving cause for undue anxiety at an early stage and showing a failure of leucocytosis; alcoholics might be included in this group. To these it should be justifiable to give an early dose of Felton's serum, and to continue the treatment if the organism is found to be of appropriate type. The treatment is more worthy of consideration in Type I. than in Type II. infections. At present these restrictions would seem to me reasonable in institutions where costs must be carefully counted, and in private practice. Expense prohibits the treatment of poor patients in their homes. In such cases the difficult decision of whether or not to counsel removal to hospital must be made. If the disease has passed its third day and adequate nursing and attention can be secured, I should usually prefer to keep the patient at home and to forego the possible advantages of laboratory study and serum therapy. Removal, if necessary, should be carried out within the first 48 hours.

While the employment of serum in pneumonia on a wide scale cannot be advocated, its claims cannot be overlooked. It is furthermore possible that a collective investigation of prognosis and a more critical search for special indications may serve to lighten the physician's burden of decision, to simplify his task, and to reduce a little further the comparatively low death-rate from pneumococcus Types I. and II. which obtains in this country among previously healthy persons. Of our 15–20 per cent. of deaths, be it remembered, a certain proportion occur among "bad lives" which are unlikely to be reclaimed by any treatment. Others again are due to infective strains against which we have as yet no potent serum. With a suitable card system observers in general practice might, I believe, greatly assist a collective inquiry into the matter of prognosis. It is to be hoped that hospital and laboratory workers will continue their studies of method and indications, and that the firms responsible for the supply of serum will find it possible to reduce the costs.

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RECURRENT PYOGENIC PAROTITIS

ITS PATHOLOGY, DIAGNOSIS, AND TREATMENT

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(WITH ILLUSTRATIVE PLATE)

DURING the past five years, in the course of investigating some 250 patients with diseases of the salivary glands, 19 cases of recurrent pyogenic parotitis have been under my care. They present many features in common, and the condition seems to be a fairly well-defined clinical entity. Formerly the more obscure inflammatory lesions of the salivary glands were ignored by physicians and surgeons alike, and their treatment has too often been only symptomatic. With recent methods of investigation much new information has been brought to bear on the pathology of recurrent parotitis, and treatment can now more often be carried out on a rational basis.

Recurrent pyogenic parotitis is characterised by recurrent swellings of one or both parotids, and even at times in the more chronic cases involving the other salivary glands. The saliva from the affected glands shows characteristic changes and sialograms show certain well-defined lesions. The name is admittedly inexact, but it does emphasise the recurrent nature of the inflammatory swelling. Considered more from the pathological standpoint the condition should be regarded as a mild chronic sialodochitis, with recurrent exacerbations which lead to attacks of acute parotitis. Typically these attacks are mild, but occasionally they may become really acute, though rarely going on to suppuration; whilst, on the other hand, in a few cases the condition appears to be more chronic from the outset. Though these are usually referred to as cases of recurrent parotitis the word "pyogenic" has been added for the sake of greater accuracy, since a clinical condition almost demonstration of the ducts of the parotid with injection of lipiodol, has proved invaluable in determining the underlying pathological lesions. The technique of sialography has been described elsewhere.[1] It is simple and entirely free from risk if carried out during the quiescent phase, and in none of the cases investigated did it have any untoward effects. A normal sialogram is shown in Fig. I (on Plate).

The pathological conditions as revealed by sialography fall in the main into one of the four following types.—

(a) *Globular.*—Certain of the cases show minute spherical dilatations at the tips of the finest ducts—that is to say, in the region of the glandular acini (Fig. II., on Plate.) These dilatations are spherical in shape, variable in size, and rarely exceed 2 mm. in diameter. This process, which I have referred to as "bronchiectasis" of the parotid, may affect the whole of the organ, or only one or more of the gland lobules. Its degree may vary on the two sides and in different cases. At the same time it should be noted that in the type of case showing these pathological changes there is little or no abnormality to be made out in the configuration of the larger ducts of the gland.

(b) *Fusiform.*—In these cases the main brunt of the lesion has fallen upon the larger and the medium-sized ducts. These ducts lose their regularity and show along their course fusiform dilatations (Fig. III., on Plate.) In an early stage these may be comparatively small and rather irregular, whilst in an advanced condition each dilatation may be about half an inch long and a quarter of an inch wide, and more regular. This condition is never seen in the ducts towards the periphery of the gland.

(c) *Segmental.*—This condition is closely allied to the preceding, and it also affects the medium or larger ducts. These ducts, whilst preserving their general course, show a rather regular series of segmental dilatations, superimposed upon which is often some degree of tortuosity, the whole suggesting an effort to overcome obstruction. (Fig. IV., on Plate.) Again this lesion may affect one part only of the duct system.

(d) *Destructive.*—A fourth type of change may at times be made out in those cases where the recurrent exacerbations have been comparatively severe, and have gone on to gross suppuration inside the parotid capsule, with destruction of glandular tissue and ducts, followed by fibrosis and scarring. (Fig. V., on Plate.) In these cases the normal regular branching tree of the parotid duct system disappears and is represented by a small number of rather irregular ramifications of the finer ducts. Associated with this there may be some dilatations of the ducts and acini, usually of somewhat irregular type.

The explanation of the above variations in the radiographic picture is, apart from the destructive type, somewhat obscure. Why in one case of recurrent parotitis the brunt of the lesion should fall on the finest ducts, and in others upon the larger ducts, with the production of fusiform or segmental dilatations, is at present unknown.

As regards the submaxillary salivary gland, the only pathological condition met with in this series has been extreme dilatation of the larger ducts (Figs. VI. and VII., on Plate), nothing at all comparable to the changes seen in the parotid has been found.

ÆTIOLOGY AND PATHOLOGY

In some of the cases under consideration the commencement of the parotitis dates from an acute dental infection, a severe tonsillitis, or a sinus infection. At times the commencement of the use of dentures or neglect to keep these adequately cleaned has been responsible. The case following acute suppurative parotitis which had been drained externally has been referred to. Compared with the submaxillary salivary gland, the parotid is much more prone to acute pyogenic infections, the former being affected usually only in association with the presence of calculi. This peculiarity has led to a considerable amount of experimental work and the formulation of various hypotheses. It is certain that practically all forms of acute and subacute pyogenic parotitis are ascending infections and that blood-borne infections are almost curiosities. It is furthermore certain that in the post-operative buccal conditions which predispose to ascending infection of the parotid there is a marked exaltation of the number of micro-organisms in the region of the orifice of the parotid ducts as compared with the number in the region of the orifices of the submaxillary ducts in the floor of the mouth. The work in this connexion has been carried out by Prof. Seifert.[2] The explanation is said to be that the secretion of the submaxillary gland is particularly rich in mucus, whilst parotid secretion is almost free from it, and, as is known, mucus has a strong bactericidal action. Once catarrh of the parotid duct has occurred there is a tendency for it to persist and to give rise from time to time to attacks of subacute parotitis. The mucus secreted is in excess of the normal; duct cells are proliferated and eventually shed; and the combination gives rise to the plugs of muco-pus which cause duct obstruction with retention of secretion. Once this has happened bacterial infection can ascend through the stagnating saliva and produce the various stages of parotitis, unless the obstruction is relieved. Furthermore, on account of the extremely delicate nature of the ducts of the parotid the condition, once established, tends to pass into a vicious circle. Duct dilatation in varying degree results from the recurrent attacks of infection and duct obstruction.

The nature of the micro-organisms has already been referred to. If in these cases there is any gross cause of sepsis in the mouth there will be increased numbers of micro-organisms there to cause further ascending infection.

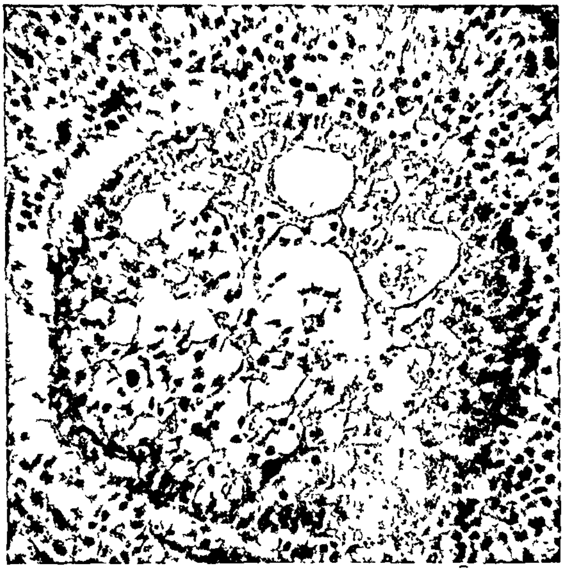
As regards the histology of the condition, very little in the way of accurate observation has ever been carried out. Only in one case of the series was there any justification for carrying out a biopsy. This was a case early in the series, with a typical history, but the physical signs suggested that there might possibly be malignant disease of the parotid. The section showed a parotid duct in which marked proliferation of the epithelial lining had occurred, partially obliterating the lumen of the duct (Fig. C.) Outside the duct there was an extensive round-cell infiltration. In view of the large numbers of epithelial cells which are constantly found in the saliva of these patients, it is almost certain that a great deal of proliferation of the lining membrane is going on.

INVESTIGATION AND DIFFERENTIAL DIAGNOSIS

The accurate diagnosis of recurrent pyogenic parotitis depends upon a careful history and a thorough examination of all the salivary glands, their ducts, and their orifices. A catheter specimen of saliva should be collected from the affected gland (it is not always possible to do this in the case of the submaxillary glands), and this should be examined for its cytology, bacteriology, and ptyalin content. Sialograms of the affected region should then be palpable thickening to be made out in the line of the parotid duct, whilst the orifice of the latter is usually normal. The changes found in the saliva are referred to later.

The actual exacerbations of the disease are in the first place due to some degree of blockage of the main duct, or of one or more of its larger branches, and upon the extent and nature of this the physical signs will depend. At first the condition is one of retention of parotid secretion behind a blocked duct, usually the main one, which may be complete or incomplete; consequently the gland swells, and there is associated pain and tenderness. Depending upon the degree of obstruction of the duct and the degree of associated infection, there will be a tendency for the infection to spread upwards into the smaller ducts and into the glandular acini. Clinically this spread is associated with mild fever, moderate constitutional disturbance, and considerable pain, swelling, and tenderness of the whole gland—a condition of acute pyogenic parotitis in which the suppurative process is confined to the lumen of the ducts and acini. In the present series of cases only one went on to gross suppuration, which first formed a confluent parotid abscess and eventually burst through the overlying parotid fascia; but in many of the cases extensive suppurative lesions drained adequately via the duct into the mouth. Two patients showed marked œdema over the parotid region and outer part of the orbit, but this resolved without external suppuration. In such cases as these the swelling of the gland may overstep the normal anatomical limits. During the more acute attacks the orifice of the parotid duct in the mouth may appear reddened and œdematous, and it may be impossible to express any secretion without prolonged massage of the gland.

FIG. C



Section of a duct of the parotid showing proliferative changes and surrounding round-cell infiltration.

THE SALIVA

To make out the characteristic changes in the saliva of recurrent parotitis, it is essential, of course, that it should be obtained by means of a cannula direct from the parotid duct, and this is usually easy. Personally I always use a simple glass cannula, the point of which is drawn out to a width of 1 mm., with a fountain-pen bulb attached, similar to the one used for sialography. With this it is easy to collect saliva and to see at once its gross appearance.

Appearance.—In the more chronic cases the appearance is highly characteristic. Saliva from a healthy parotid duct is clear, and microscopically is free both from epithelial and pus cells. Saliva from patients with recurrent parotitis is faintly, or even markedly, turbid, and suspended in it are numerous flakes of somewhat spherical shape, the larger ones being 1 mm. or so in diameter. These are plugs of mucus and cells, and in reality represent rolled-up casts of the ducts of the parotid. The number and the size of these vary from case to case and in the same person during different phases of the disease. On the other hand, the relatively milder cases may show nothing more than the diffuse turbidity of the saliva.

Cells.—When the saliva so obtained is examined by means of a Gram film the plugs are found to consist of shreds of mucus in which are embedded masses of cells. These cells are of two kinds, pus cells and epithelial cells. In the more acute conditions the former are more in evidence, whereas in the more chronic cases the epithelial cells predominate. Of the epithelial cells a large variety of shapes are found, some being tall and columnar with basal nuclei, others flask-shaped or truncated, and many large and rounded with small central nuclei. (Fig. B.) This variety is accounted for by the fact that in a well-established case of recurrent parotitis there are almost certainly proliferative changes in the walls of the ducts, and the resulting epithelial cells tend to become rather irregular. At times large areas of epithelial cells are present forming a definite membrane or representing casts of the smaller or larger parotid ducts. In the more fluid part of the saliva similar types of cells may be found in smaller numbers.

Micro-organisms are not as a rule seen in large numbers in the Gram film during the quiescent stage, but some of the larger ovoid epithelial cells are always closely packed with ingested bacteria. Cultures made during this stage usually yield salivary streptococci, *Staphylococcus aureus*, or diphtheroids. Often more than one organism is present, but in one case in the present series a profuse growth of pure pneumococci was obtained. The exact nature of the micro-organism does not appear in practice to make a large difference to the resulting clinical or pathological picture.

Mucus.—Parotid secretion from a healthy gland contains only the merest trace of mucus. This is derived from small glands situated in the walls of the larger ducts and does not originate from the gland substance proper, the cells of which are entirely serous. In pathological conditions where there is catarrh of the ducts the amount of mucus secreted is largely in excess of the normal. The question as to how far this is a protective measure is referred to again later.

Ptyalin.—During health the normal ptyalin content of parotid saliva has been shown in a series of cases to vary between 500 and 5000, or even 10,000 units. In four cases of recurrent parotitis where this investigation was carried out the figures obtained were between 100 and 250 units, which suggests that as a result of the infective and obstructive processes the functional activity of the gland was seriously depressed.

SIALOGRAPHY

The investigation of these cases of recurrent parotitis by sialography, or the radiographic

MR. PAYNE: RECURRENT PYOGENIC PAROTITIS

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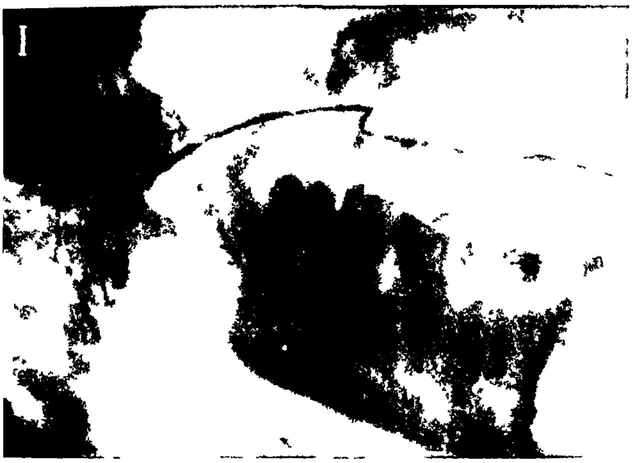

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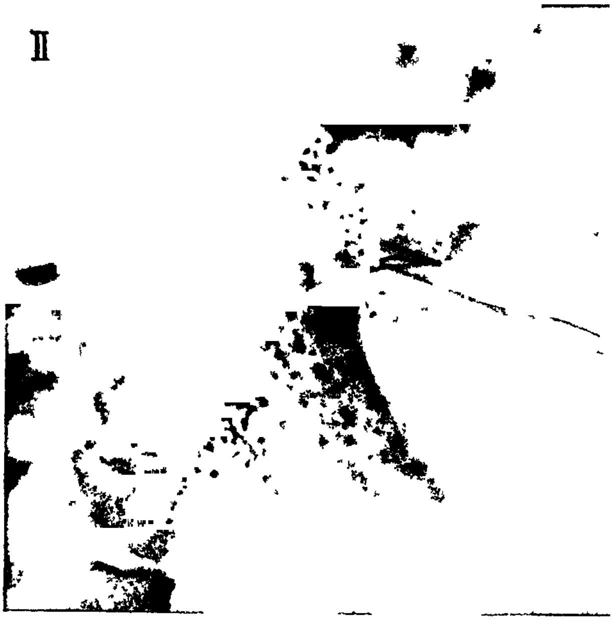

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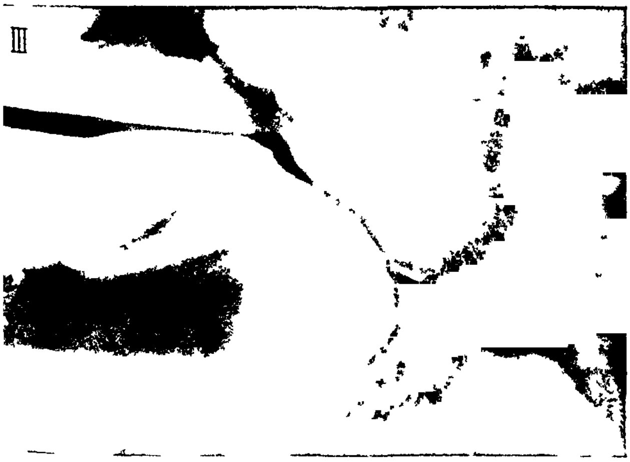

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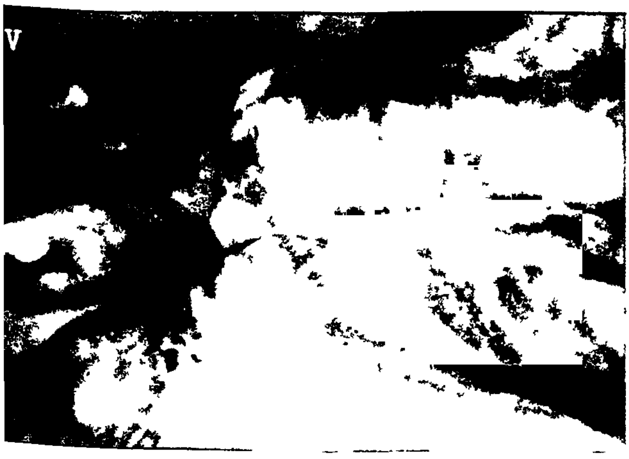

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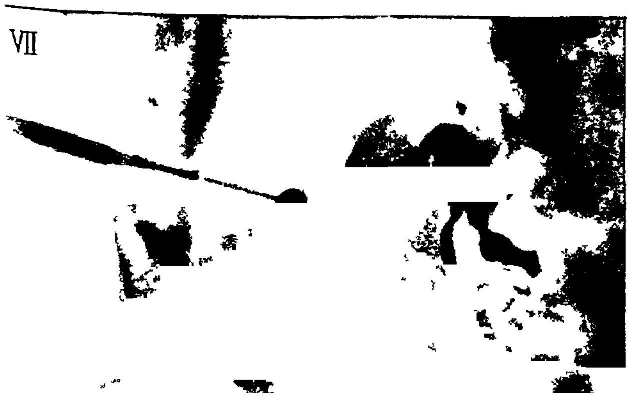


taken, which in the case of the submaxillary should include both intra- and extra-oral films, to exclude—though not necessarily absolutely—the presence of a calculus; and finally sialography should be performed when practicable to determine the site and severity of the pathological lesions of the ducts, and to serve as a guide to treatment. In all cases a complete blood count and a Wassermann reaction should be carried out. The following are the more *important conditions which have to be differentiated* from recurrent parotitis.

(a) *Mumps.*—Many of the patients in the present series had, in their initial attacks, and even in two or three of their subsequent attacks, been diagnosed as suffering from mumps. In this connexion certain points should be borne in mind. Firstly, a diagnosis of mumps in an adult should not be made too readily without a history of contact. Secondly, in a doubtful case of mumps a catheter specimen of parotid saliva will not show the catarrhal changes of recurrent parotitis, though it may show a few cells. Finally, for practical purposes recurrent attacks of mumps are unknown, and this diagnosis should never be made without excluding the possibility of recurrent parotitis.

(b) *Stone.*—A typical case of parotid duct calculus gives a characteristic history of a meal-time swelling with subsidence of the swelling, or almost complete subsidence, between meals—a state of affairs which is never seen in recurrent parotitis. When, however, infection is superimposed upon a small calculus, then the clinical picture may approximate to that of recurrent parotitis. In all cases, therefore, skiagrams are essential to exclude calculus, and in addition sialograms in the latter may localise a doubtful duct obstruction.

(c) *Mikulicz's Disease.*—When more than one salivary gland is involved in the process the question of true Mikulicz's disease may be raised. By this is meant a familial or acquired disease affecting one or more of the salivary glands, usually all of them more or less symmetrically, together with the lacrymal glands, in which pyogenic infection, calculi, uveo-parotitic polyneuritis, thyroid disease, blood diseases, lymphosarcoma, lead or other poisonings, syphilis, tubercle, and lymphadenoma have been excluded. In true Mikulicz's disease the saliva contains no evidence of any duct catarrh, and the sialograms are normal. At the present time I have under my care a patient who gives a history which would do for that of a recurrent pyogenic parotitis affecting both parotids and submaxillary salivary glands, but in whom there is no evidence that the condition is of bacterial origin. There is no sign of duct catarrh, the sialograms are normal, and the diseases enumerated have been excluded.

(d) *Uveo-parotitic Polyneuritis.*—This rather rare condition is associated with peripheral neuritis, inflammation of the uveal tract, and parotitis. As, however, the parotitis may sometimes, though not usually, be the initial manifestation, and one parotid may be affected after the other, with a tendency at times to recrudescence, the condition must not be forgotten.

(e) *Pre-auricular Lymphadenitis.*—A clinical condition which may occasionally cause some confusion is a recurrent form of lymphadenitis in the pre-auricular lymph glands. This confusion is the more possible because these lymph glands may be partly superficial to and partly deep to the capsule of the parotid gland. The inflammation is usually a chronic pyogenic one, in which case some cause is likely to be found within the drainage area of the glands; or occasionally the condition may be a tuberculous adenitis. In two cases of the present series recurrent bilateral pyogenic parotitis existed side by side with chronic pre-auricular lymphadenitis, for which there was an obvious cause.

(f) *Mixed Parotid Tumour.*—When recurrent parotitis affects only one lobule of the gland the physical signs may simulate a mixed tumour, but the other *investigations should lead to an accurate diagnosis.*

(g) *Malignant Disease of the Parotid.*—In the very chronic form of recurrent parotitis which has lasted many years, particularly if there has been a considerable amount of "destructive" suppuration, the physical signs may closely simulate malignant disease. Again the accurate diagnosis may rest with the special methods described.

LEGENDS TO ILLUSTRATIVE PLATE

FIG. I.—Normal sialogram of right parotid gland.

FIG. II.—Sialogram of right parotid showing globular type of dilatation. Some lipiodol remaining in the left parotid gland is also seen in the anterior part of the picture.

FIG. III.—Sialogram of left parotid showing fusiform type of dilatation.

FIG. IV.—Sialogram of the left parotid gland showing a segmental type of dilatation of the main duct and a similar change in the ducts corresponding to the socia parotidis.

FIG. V.—Sialogram of right parotid showing destructive type of lesion.

FIG. VI.—Normal sialogram of right submaxillary gland.

FIG. VII.—Left submaxillary sialogram from a patient with recurrent infection of the parotid and submaxillary glands.

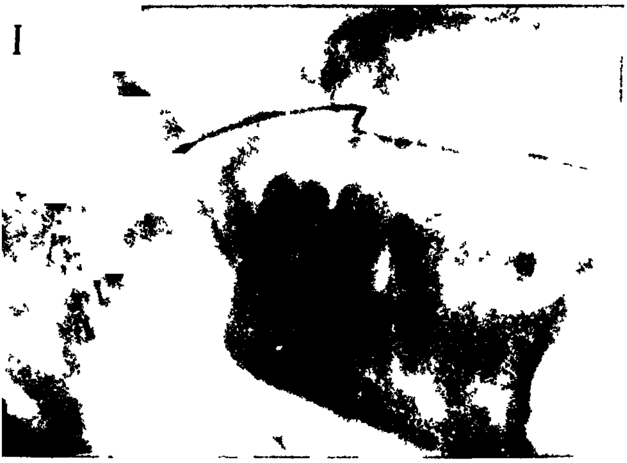
TREATMENT DURING THE QUIESCENT STAGE

If it is borne in mind that recurrent parotitis is due to recurrent obstruction of some part or parts of the duct system, associated with mild pyogenic infection, it will be at once seen that the first principle of treatment is to keep the ducts of the parotid patent, and to keep the region of the duct orifice in the mouth as free from infection as possible. Infection leads to epithelial desquamation in the ducts, together with a marked increase in the mucus content of the saliva, and this combination leads to the production of plugs of muco-pus which cause obstruction and retention of secretion, and pave the way for ascending infection. During the quiescent stage treatment must be directed to the avoidance of a fresh entry on the vicious circle. The following are the more important lines of treatment.

Infections.—Any obvious cause of sepsis in the mouth, particularly in the region of the affected parotid duct, should certainly be dealt with. Especially is this true of infected teeth. At the same time a scrupulous hygiene of the teeth and mouth should be insisted upon. In some cases I have seen the condition has certainly been aggravated by the dirty state of the patient's dentures, and if these are ill-fitting they may sometimes press on the buccal part of the duct.

Massage of the parotid is by far the most important single item in the line of treatment. If duct obstruction can be avoided, then one can certainly say that the development of recurrent attacks of parotitis will also be avoided. In this connexion I have shown by means of lipiodol injections of grossly diseased parotids that it is possible to empty the main duct

MR. PAYNE: RECURRENT PYOGENIC PAROTITIS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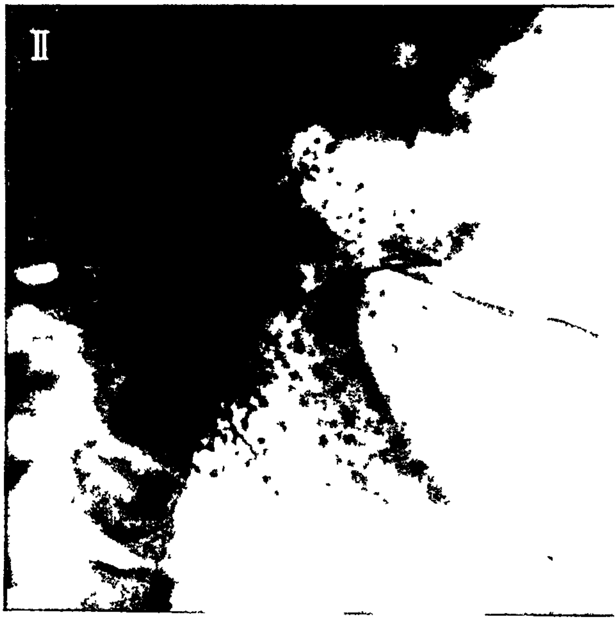
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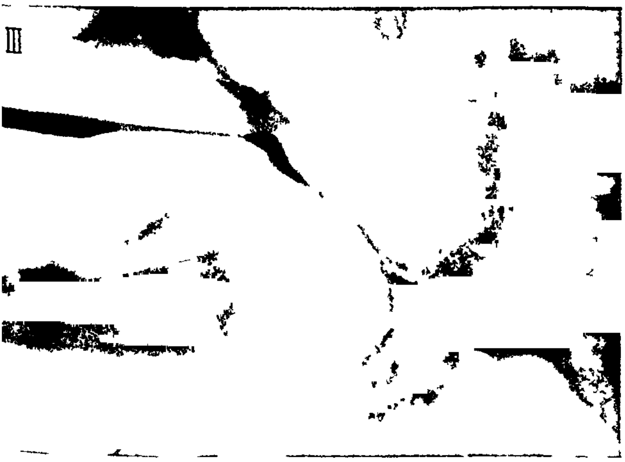
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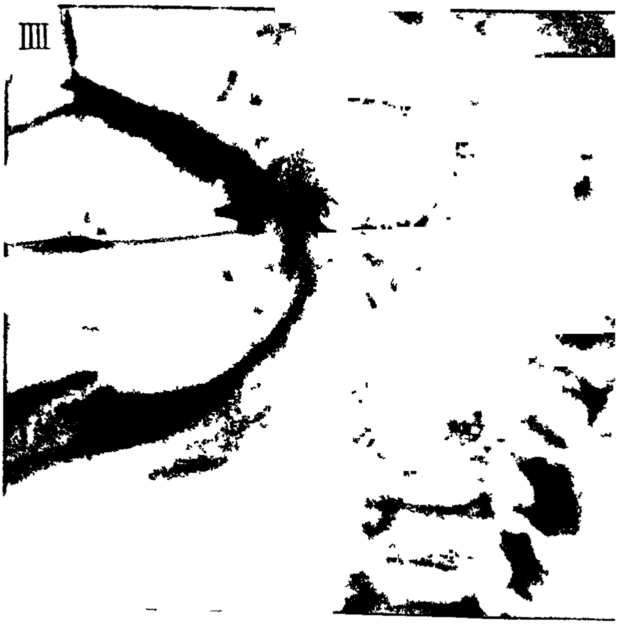
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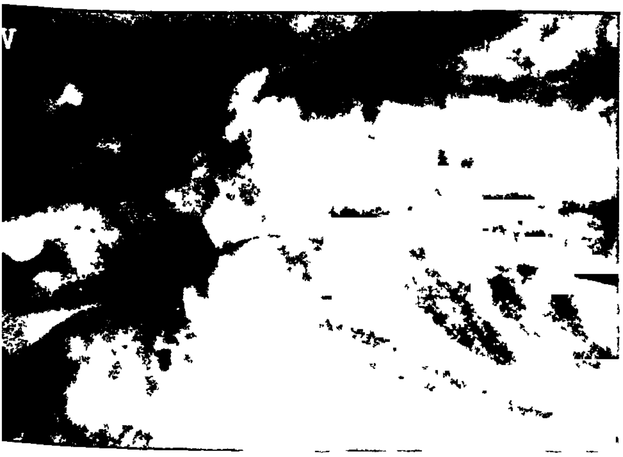
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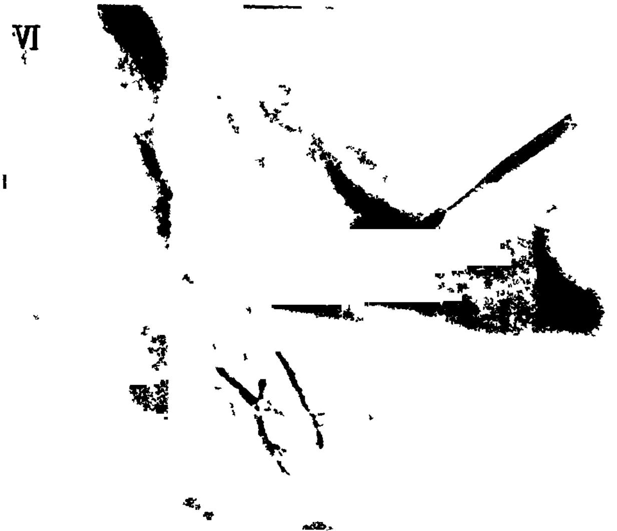
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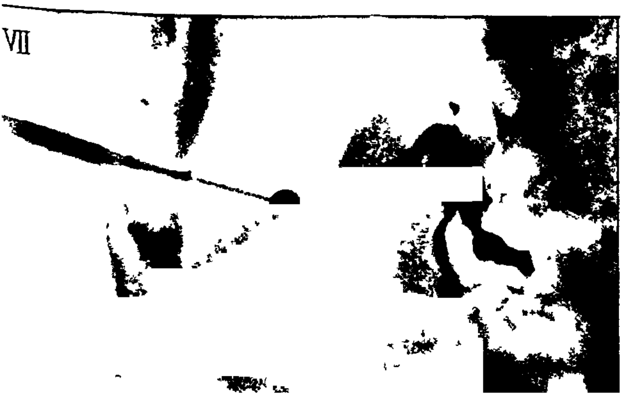
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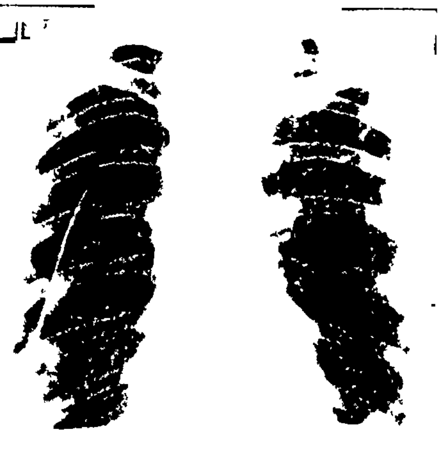
DR. GRAVESEN: SELECTIVE LUNG COLLAPSE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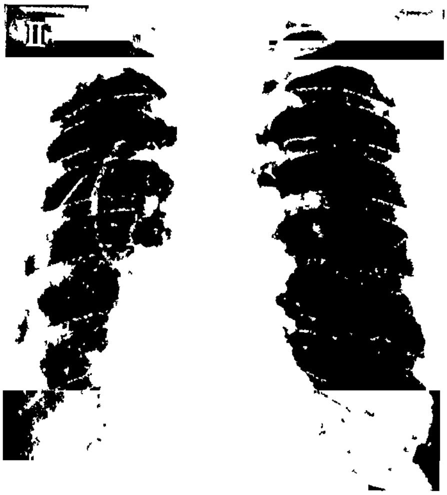
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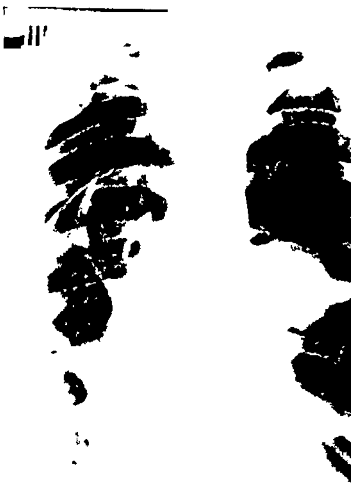
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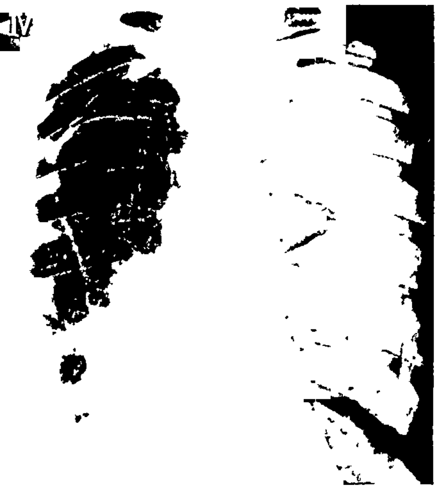
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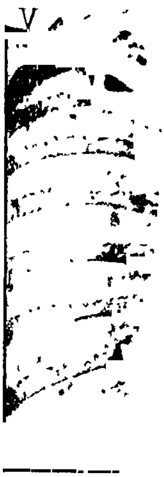
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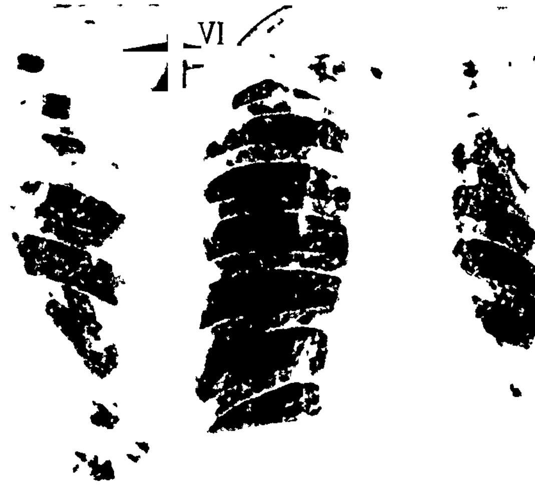
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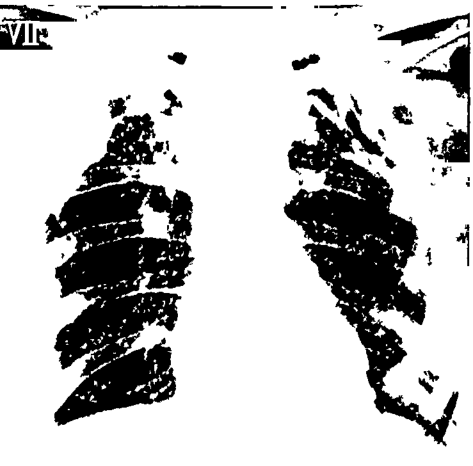
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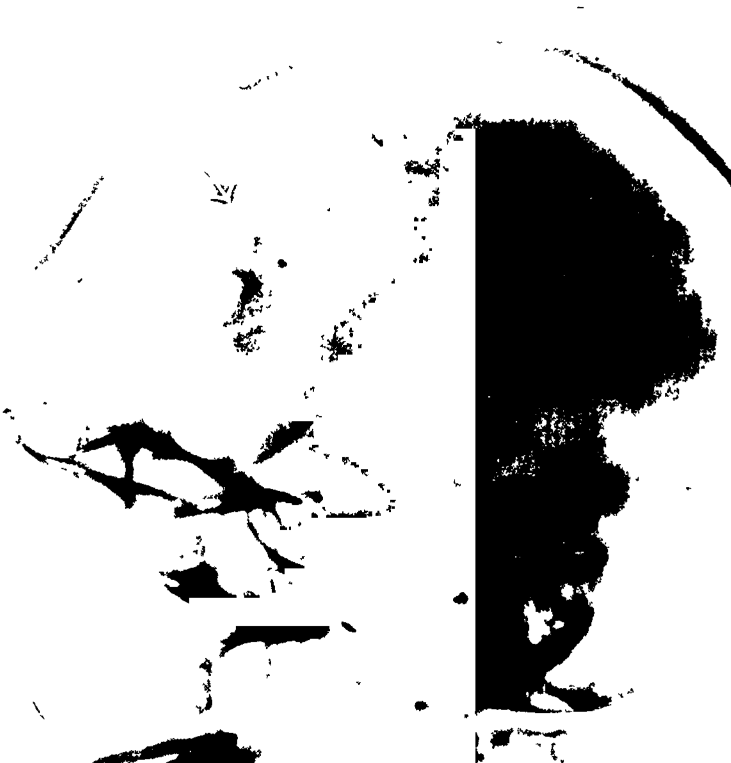
DR. ALLEN: CASE OF NÆVOID AMENTIA


Radiogram of skull showing crescentic shadows due to calcification in nævoid lesions in the meninges.

and its branches after even a few seconds' massage of the gland. Patients, therefore, should be instructed to carry out prophylactic massage of the parotid. This massage should always be directed from behind forwards towards the angle of the mouth starting from three points—the tragus, the lobule of the ear, and just behind the angle of the jaw. It is most efficiently carried out by the thumb, and it should be demonstrated to the patient with instructions to carry it out for at least five minutes night and morning.

Diet.—In addition to the above, many patients are helped by making them start the day by taking the juice of half a lemon in a little water in order to cause an intense flow of saliva after the possible stagnation during the night. This should be done immediately after massage. At this point I may mention that some patients wake up in the morning with the parotid swollen on the side on which they have slept. Whilst the diet does not usually need alteration it should be impressed upon the patient that since thoroughly efficient mastication is the greatest single factor in the production of the normal flow of saliva, they should take their food rather dry and chew it very thoroughly.

DR. GRAVESEN: LEGENDS TO ILLUSTRATIONS ON PLATE

FIG. I.—Female, aged 20. Treated with right-side artificial pneumothorax for four years. Readmitted with a cavity in left apex near mediastinum. Tubercle bacilli present.

FIG. II.—Same case after induction of bilateral artificial pneumothorax. The apex cavity of the left lung is seen hanging in a stretched adhesion, hindering the collapse of the upper lobe.

FIG. III.—Same case immediately after cauterisation of the adhesion. The cavity has dropped into the middle of the artificial pneumothorax.

FIG. IV.—Same case three months after the cauterisation. The left-side artificial pneumothorax has changed into a selective one like that on the right side. No bacilli found.

FIG. V.—Female, aged 27 (the case mentioned at the end of the paper) with bilateral apical cavernous affection.

FIG. VI.—Same case after left-side apical thoracoplasty. (Carried out in January, 1931.)

FIG. VII.—Same case after bilateral apical thoracoplasty. (Operation on right side April, 1931.)

Operations.—Operation is but rarely necessary in the treatment of recurrent parotitis, but it may be indicated where the condition is severe or where it has failed to respond to other treatment carried out efficiently. It may consist in: (1) dilatation of the parotid duct; (2) slitting the orifice of the parotid duct, followed by dilatation; or (3) avulsion of the auriculo-temporal nerve. Dilatation of the parotid duct alone is not often of much value, since the orifice usually contracts quite rapidly after cessation of the dilatation. Slitting the orifice of the duct into the buccal portion can be carried out under local anæsthesia, and when it is followed by regular dilatation until healing is well established a wide patulous opening persists. Avulsion of the auriculo-temporal nerve is not as a rule either serious or difficult. It leads, of course, to paralysis of parotid secretion through destruction of the nerve-supply. Its use should be reserved for the more intractable cases.

Radiotherapy.—In the present series of cases X rays have been used on only two patients. One of these had been subjected to a prolonged course of treatment before I saw her, but without any obvious benefit. In the other case X rays were given with a temporary good result; but in neither were the previous observations sufficiently accurate to warrant deductions. It is further a moot point whether in these cases X rays do good by clearing up the infection and catarrh or by leading to atrophic changes in the glands. I am at present investigating the effect of small doses of X rays in a series of patients with proved recurrent parotitis. Sialograms have been taken, and the saliva has been examined for cells and organisms, and for its ptyalin content. After treatment is completed these investigations will be repeated and considered in relation to the clinical picture.

TREATMENT DURING EXACERBATIONS

During the actual exacerbation of the disease there is always either complete or partial obstruction of some portion of the duct system, often the main duct. Immediate treatment thus consists in the relief of obstruction, and is identical with that which should be undertaken from the outset in any case of acute pyogenic parotitis, whether recurrent or not.

The surgeon should first of all satisfy himself that the main duct is patent, as shown by the efflux of pus or muco-pus on massage of the parotid, and as much as possible should be expressed at once from the gland and ducts by this means. The patient should then be instructed to repeat the massage before and after each meal, and first thing in the morning and last thing at night. The diet again should be as solid as possible. Frequent hot mouth washes will help to keep the mouth clean and soften secretion in the duct. For the pain, the face should be bandaged over wool, and a rubber hot-water bottle applied, which will also tend to hasten resolution. It is far better in these cases to avoid all forms of external moist heat, which will only tend to make the skin sodden, and perhaps accentuate any tendency to external rupture.

With the above measures it is in general possible to tide a patient over the acute exacerbation, and when treatment is undertaken energetically the condition usually begins to subside after 36 or 48 hours, the saliva gradually becoming clearer and less purulent. If, on the other hand, it is impossible to get the duct working by massage when the case is first seen, or at any rate after the first 24 hours, further measures are essential if gross suppuration is to be avoided. In these cases it is sometimes possible by probing the duct, or by aspirating it with a cannula, to dislodge some of the muco-purulent plugs. At the same time in the more severe cases the duct orifice may be slit up for about three-quarters of an inch. The treatment of gross suppurative parotitis which demands external operative measures falls outside the scope of this paper.

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2. Seifert, E.: Deut. Zeits. f. chirurg., 1926, cxcviii., 387.

AIR PAGEANTS FOR HOSPITALS.—It is proposed that between April and October next British Hospitals Air Pageants should give 200 displays in various parts of Great Britain to raise money for local hospitals. The demonstrations will be led by Mr. C. W. A. Scott, who made the record flight from England to Australia. The proposal has the support of the British Hospitals Association.

SELECTIVE LUNG COLLAPSE IN BILATERAL DISEASE *

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MEDICAL SUPERINTENDENT OF VEJLEFJORD SANATORIUM, DENMARK

(WITH ILLUSTRATIONS ON PLATE)

DURING recent years attention has been drawn more and more to the problem of selectivity in the use of collapse therapy. This therapy is increasingly accepted as the treatment "par excellence" for pulmonary cavities. Its object is now to establish sufficiently effective conditions for closing cavities and at the same time to secure the least possible interference with the function of the lung as a whole. It is on these lines that the idea of selectivity in collapse therapy is to be understood and carried out.

The adoption of this new principle considerably increases the scope of collapse therapy. It is true that it involves a more exacting demand for individual treatment. Both in artificial pneumothorax and in operative treatment it abolishes routine and uniformity of technique. To use lung collapse in accordance with the demands of selectivity it is necessary to work out a new plan for each individual case, and to carry out this plan in close reference to the particular conditions. Thus, this new idea can only be materialised at the cost of more intensive work and more exact touch with individual conditions. On the other hand, its advantages can be so great as fully to repay the greater trouble.

These advantages are a considerably reduced risk and a more assured result than when collapse therapy is used as a mere matter of routine. The possibility of saving as much as possible of the pulmonary function justifies an early application of the treatment in those cases of limited cavernous affections in which the surgeon is most apt to postpone intervention until he sees whether spontaneous healing or progressive destruction will take place. In such cases time is often wasted, and when at last the collapse is applied more radical measures are found to be necessary. An early use of selective collapse may often mean a short cut in the treatment. In more advanced affections, where the indication is beyond all doubt, there is no less advantage in saving as much pulmonary tissue as possible fit for function.

Even in unilateral cases the idea of selectivity is therefore of great value, but one of its special advantages is the possibility of extending the methods of collapse to cover not only unilateral—or chiefly unilateral—cases, but also cases where bilateral cavernous affection is present.

THE METHODS OF OBTAINING SELECTIVE COLLAPSE

In this connexion, as in many others, the example to follow is given us by Nature. The spontaneous healing of a limited affection often takes place through a retraction which causes the slightest possible damage to the rest of the lung tissue. We can observe how the affected part of an upper lobe gradually withdraws itself, the lobe being folded together like a fan towards the upper part of the mediastinum. When a lung under artificial pneumothorax treatment re-expands, the healthy parts fill up the pleural cavity while the affected part is kept behind by the retractive process of the tissue. This means that the selective effect of an artificial pneumothorax is provided by the natural tendency of retraction within the lung tissue itself. A selective pneumothorax is one that is kept refilled only as much as is sufficient to keep the affected part collapsed while the rest of the lung is more or less expanded.

In the earlier stages this principle demands smaller refills at shorter intervals than in ordinary artificial pneumothorax work. Also, more frequent revision by screening is needed in order to keep the lung in an ideal stage of selective collapse. Later on, when the pleura has become stiffer and the healthy parts of the lung adhere to the chest wall in an expanded condition, the continuation of the selective artificial pneumothorax will, as a rule, be as easy to maintain as a complete one, the refills being done at longer and longer intervals. In this way it is often possible to continue an artificial pneumothorax for several years on a gradually decreasing scale, the refills becoming smaller and less frequent, until at last the treatment is discontinued, provided that the cavity has not reopened under the slow gradual re-expansion.

ADHESIONS

The presupposition for such ideal management is, however, that there are no adhesions. Adhesions, as a rule, counteract the selectivity of an artificial pneumothorax. That does not mean that the effectivity is always hindered; by positive pressure the collapse of cavities may be obtained in spite of adhesions. But the adhesions are apt to make the artificial pneumothorax contra-selective. They compel us to collapse the healthy parts of the lungs much more than the size and localisation of the cavities indicate. The adoption of selectivity therefore means a greater use of intervention against adhesions. Where these are accessible, cauterisation has a larger field of indication. Nowadays adhesions are cauterised, not only when they cause the persistence of sputum and bacilli, but often merely because they prevent the selectivity of the artificial pneumothorax. When it is probable that a cauterisation will enable the healthier parts of the lung to attain a better function and will secure more ideal conditions for a gradual re-expansion of the affected parts, cauterisation is indicated even if the artificial pneumothorax has been clinically successful. Not only is the same result sometimes attained by less reduction of pulmonary function, but also the later re-expansion of the lung may be safer than if a stretch of adhesion has been allowed to counteract the selectivity of the collapse.

Broader surface adhesions still more greatly prejudice both efficiency and selectivity. It is common for an artificial pneumothorax to bring about complete collapse of a healthy lower lobe, while the affected upper lobe is kept more or less expanded by adhesion to the dome of the pleura. We often doubt whether it is of any use at all to maintain this condition. Now and then a good clinical result is obtained, but often at the expense of severe encroachment upon the respiratory functions. Here the principle of selectivity makes us proceed earlier than formerly to a replacement of the contra-selective artificial pneumothorax by a local operation, an apical thoracoplasty, or an apicolysis, after which the lower lobe is allowed to re-expand for continued function. In the less frequent case of an affected and adherent lower lobe and a partial artificial pneumothorax upwards, the artificial pneumothorax may be wholly or partly replaced by a phrenicectomy, after which the healthy upper lobe may be left for re-expansion.

In cases of more or less general adhesion, making artificial pneumothorax impracticable, the selectivity

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* Paper read before the Tuberculosis Association in 1932.

of collapse is carried out by a keen individualisation of operative technique. The total thoracoplasty which is still adhered to by many schools as a matter of routine ought nowadays to be reserved for total destructive affection of a lung and for total empyema. In more limited cavernous affections it should be our aim to change the shape of the lung—and the thorax—to an extent that corresponds as closely as possible to the extension of the disease, and no more. Why should the whole of a lung be permanently excluded from function for the sake of a quite limited cavernous process of the apex? But there is still much opposition in certain quarters to partial thoracoplasties. The old ideas about the risks involved have handicapped development. The risks are there, but they can be neutralised by proper technical improvements. The risk of aspiration can be checked by a technique of anæsthesia and after-treatment which effectively counteracts any tendency to aspiration. The risk of missing the effect can be met by an operative technique which is built upon a thorough experience of the parts of the chest wall which it is most important to attack.

In such thoracoplasty it is necessary to work out the plan of operation which is best suited to the individual case. Most frequently the affection is apical, and special methods have been worked out to deal with these. Coffy has published his method of resecting the upper two or three ribs through an incision in the lateral region of the neck. Von Graf has suggested a more convenient and more adaptable way of attacking the upper ribs from behind. The different methods of apicolysis, plugging, and phrenicectomy have attained a wider scope in providing an operative collapse on strongly selective lines. This is not the moment for a discussion of the relative merits of these various methods—indeed, no general rules can be laid down in the matter of choice. We have to choose in each individual case the method, or constellation of different methods, which is most likely to produce the conditions required by the cavity or cavities present.

In one particular respect selectivity in thoracoplasty work has meant an appreciable advantage in technique. Partial operations can practically always be carried out in one stage. Since the introduction of selective thoracoplasty the necessity of two-stage operations has been reduced to a minimum, which, of course, goes far to reconcile patients to the operation.

THE USE OF BILATERAL COLLAPSE

Obviously, when collapse is indicated on parts of both lungs, it should be applied on selective lines. We must realise, however, that these cases have a particularly gloomy outlook. The presence of tuberculous cavities in one lung renders the prognosis serious enough; when both lungs contain cavities the way is, as a rule, barred for any kind of conservative treatment, even if the affections remain temporarily quiescent. Any result, even a relative one, that can be obtained by active intervention must therefore be welcomed as pure gain, and results have already been observed which justify the occasional adoption of bilateral intervention in cases where unilateral collapse has hitherto been contra-indicated.

Bilateral artificial pneumothorax has been in vogue for several years. Contributions to the subject fill the columns of most tuberculosis periodicals. It can be said to have passed its experimental stage and is now enrolled among the effective—or at least relatively effective—measures against bilateral tuberculosis.

Alternating artificial pneumothorax was tried for many years. Saugman was one of the first to make the attempt, as early as 1908. During several years he treated a series of cases alternatively on the two sides. His results were very discouraging; they were permanent in only 1 case out of 11. Other workers have had similar experience. Better results were only obtained when the bold step was taken of establishing the bilateral artificial pneumothorax simultaneously. The reasons for the improvement can now be seen. In the alternating method the more advanced lung was taken under treatment first, and during this treatment the other lung got worse. This often caused a discontinuance of the first artificial pneumothorax too early, and at the same time it provided a less satisfactory prospect for the second. By simultaneous application we can now, to a certain extent, avoid this twofold embarrassment; each lung can be treated at the time when indication is present, and the treatment can be continued for the length of time suitable for each. So far, the indications and technique of bilateral and unilateral artificial pneumothorax are not very different. The problem is just how to manage each of the bilateral collapses as if it were a unilateral one, and this problem is solved when the principle of selectivity can be made effective on both sides.

Special attention must be paid to a scrupulous technique in induction and refills. Any lung lesion produced by the needle may be twice as dangerous as a similar one in unilateral collapse. A tension-pneumothorax is a serious complication which in unilateral cases may be fairly easily managed, but in bilateral cases it is extremely dangerous. It has happened once at Vejlefjord Sanatorium, and the patient nearly died, but we succeeded in saving her with a good result. This experience made us abolish needles with side-opening for the refills in bilateral cases. The point of this needle will always go a little deeper than its opening, and an artificial lesion of the lung is therefore more likely to take place than when an ordinary needle, open at the end, is used.

Cauterisation is practicable even when bilateral artificial pneumothorax is established. It is only necessary to prepare for the operation by temporarily enlarging the artificial pneumothorax in which a stretch of adhesion is present, and correspondingly diminishing the other one. After the operation the refills are so continued as to re-establish a more just apportionment of the collapse. It has even proved possible to cauterise on both sides at different phases of the treatment.

COMBINATIONS OF METHODS

A more complicated state of affairs arises when artificial pneumothorax cannot be selectively managed on either one or both sides. We are further handicapped by the fact that the more affected lung is generally also found to be the more adherent. And yet, if a fairly good general condition is preserved and other circumstances encourage us to do something active instead of leaving the patient to his more than doubtful fate, a combination of operative treatment on one side and artificial pneumothorax on the other, or of bilateral operative measures, presents itself for consideration. Again, no general rules can be given for such combination. There are many different constellations for obtaining selective collapse by one or another operation on one side, selective artificial pneumothorax on the other, or by bilateral selective operations. But in this respect, as in all medical work, our aim must be *nil nocere.* It should not be forgotten that in this work we are moving on the edge of a precipice. On the other hand, the experience gained in bilateral artificial pneumothorax has proved that a comparatively large portion of the lungs can be excluded from function—temporarily and even permanently—without any immediate danger, and with less discomfort to the patient than one would suppose. We may well make use of this experience provided that we observe sufficient caution, not approaching too closely the limits which in artificial pneumothorax are found to be safe. Operative measures demand more general strength in the patient and more reserve power of function than does artificial pneumothorax, and the changes produced by operative intervention are permanent, and cannot—as can the artificial pneumothorax—be regulated to a more reduced scale.

It has proved possible to combine artificial pneumothorax on one side with phrenicectomy, plombage, or even partial thoracoplasty on the other. A bilateral phrenicectomy has been carried out with a relatively good result and without any serious disturbance of function. Other cases have been published.

BILATERAL PARTIAL THORACOPLASTY

For several years we have at Vejlefjord Sanatorium contemplated the possibility of performing partial thoracoplasty bilaterally. Theoretically this idea should be justified when limited cavernous affections are present in both apices, and general adhesion prevents artificial pneumothorax on either side.

The first case fulfilling the required conditions, a young woman, was admitted in the summer of 1930. The patient had a cavity the size of an orange in the right apex and one the size of an egg in the left apex. Artificial pneumothorax was impracticable on either side. With the intention of performing a bilateral apical thoracoplasty the right apex was operated on. This operation, however, was complicated by a severe hæmorrhage when the first rib was cut. The bleeding was successfully checked, and she survived the operation, but died four weeks later from a tuberculous pneumonia in the right lower lobe.

The next patient of this type, also a young woman, was admitted in the autumn of 1930. In the left apex there was a cavity about the size of a duck's egg, and in the right apex a cavity about the size of a plum. Artificial pneumothorax was tried on the left side, but was found impracticable. With a subsequent artificial pneumothorax of the right lung in view, a selective thoracoplasty was performed in January, 1931, on the left side, with resection of the upper six ribs. When the patient had picked up after this operation, artificial pneumothorax was tried on the right side, but here too it failed on account of synechia. Three months after the left-sided operation, in April, 1931, a thoracoplasty was performed on the right upper lobe, of the same extent but with less radical resections than on the left side. After both operations, but especially after the second, the patient showed symptoms of threatening œdema of the lung, but she got over this and has ever since made considerable progress. Whereas she had been running more or less fever for about one and a half years before the operations, the temperature has kept normal ever since. The expectoration, which had been rather copious, decreased to about 10 c.cm. a day, still, however, containing tubercle bacilli. Her mobility after the operations has been satisfactory and she has not suffered to any serious extent from dyspnœa.†

As far as can be gathered from the available literature, this is the first case of bilateral thoracoplasty yet published. It was performed exclusively on the basis of experience with other bilateral interventions, especially artificial pneumothorax. It has proved that bilateral selective thoracoplasty is possible, and that this active treatment can yield a result which, relative to the previous development and prognosis of the disease, may be considered decisive.

THE TREATMENT OF TUBERCULOUS CAVITIES OF THE LUNG

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Tuberculosis of the lung begins as a small area of infiltration. This may heal leaving no damage or, at the most, a small scar which does not affect the health of the individual and is unsuspected, but may be found accidentally many years later at post-mortem examination. On the other hand, the infiltration may spread and lead to caseation and necrosis of the lung tissue. Even then healing may occur by the formation of fibrous tissue, but it often happens that the necrotic lung breaks into a bronchus and leaves a cavity. The walls of this cavity are composed of necrotic tissue through which other caseous masses may break, so that the cavity increases in size, and in rare cases the whole of a lobe may be converted into one large cavity. More commonly in a chronic case there are several cavities not directly connected with each other. When the caseous material has broken into a bronchus and been coughed up, the necrotic walls of the cavity may become converted into firm fibrous tissue and, if there is no spread of the disease into other parts of the lung, healing results.

It is clear, therefore, that there are three stages of tuberculosis of the lung to be considered : (1) infiltration ; (2) caseation ; and (3) excavation. This classification is the one usually adopted in arranging museum specimens, but it is not satisfactory for the clinician. A patient with a tuberculous cavity may be in the third stage of the disease, but he often has a far greater expectation of life than one with an acute tuberculous broncho-pneumonia without a cavity.

Broadly speaking, prognosis depends on the degree of activity in the lung tissue and not on the presence or absence of cavities. It is true that there are certain dangers dependent on the cavity itself. To mention two : there is the danger of a fatal hæmoptysis from an aneurysm of a vessel traversing the cavity, and there is the danger of infection and the formation of pus resulting in the daily expectoration of a large quantity of sputum. The cavity may act as a nest or incubator for tubercle bacilli and other organisms.

From the clinical point of view there are three types of cavity : (1) the recent cavity with a ragged wall of necrotic tissue ; (2) the cavity lined with a fibrotic wall, but containing pus ; and (3) the dry cavity with a firm fibrotic wall.

THE "X RAY" CAVITY

In addition there is the "X ray" cavity, which I will consider separately as there is some doubt whether it is a cavity or not. By "X ray" cavity I mean the annular shadow which is often disclosed by radiological examination of a patient who has no other sign or symptom of a cavity. Some of these annular shadows are without doubt true cavities, for they have been confirmed by post-mortem examination. They are not seen except in tuberculous cases. Moreover, it is not uncommon to see in the ring a fluid level which changes with position.

It has been remarked, however, that these annular shadows are always circular or oval, whereas a cavity is often irregular in shape. There is no history of sputum, temperature, or other evidence of necrosis of lung; there are no physical signs of cavity; if lipiodol is injected into the trachea it does not enter the ring: the shadows are apt to disappear.

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† During the past year she has made constant progress, and tubercle bacilli are now absent from the sputum.

In one of my patients there were signs of infiltration in one lung, tubercle bacilli were in the sputum, and radioscopy showed a large annular shadow. I collapsed the lung by pneumothorax, but the patient developed acute bronchitis, and after the second refill I let the lung re-expand. A fortnight later, when the patient had recovered from the bronchitis, radiological examination showed that the lung had re-expanded and there was no annular shadow. It is difficult to believe that a genuine cavity could have been closed after two pneumothorax refills.

For these reasons it has been suggested that these annular shadows are not true cavities but local pneumothoraces, patches of pleurisy called pleural rings or bubbles of air in the lung tissue. When pneumothorax occurs in the apparently healthy it is usually due to rupture of a localised emphysematous bulla, and it is probable that these bullæ or air bubbles are more common than is generally believed. They are formed in the alveoli, which are stretched by air under pressure, thus causing a circular bubble of varying size. A valvular obstruction in a bronchus would allow air to enter but not to leave the bulla. Thus quite a large cyst might form, but it would disappear suddenly like a pricked bubble if the obstruction were removed and the air allowed to escape. It would also disappear by absorption of air if the valvular opening into the cyst become obstructed so that no more air could enter. Andrew Morland has emphasised[1] the importance of valvular obstruction which allows weakened alveoli to become pumped up and produce a cavity. There can be little doubt that these annular shadows indicate true tuberculous cavities or air cysts produced by a valvular opening into the air cells. They are certainly not due to pleurisy and adherence producing a pleural ring, nor are they local pneumothoraces.

It has been found at Brompton Hospital that when an annular shadow has been shown by radioscopy before death, a cavity in the corresponding position in the lung has invariably been found at post-mortem examination, though sometimes a cavity found post mortem has not been previously disclosed by radiological investigation. Air cysts are not found in the post-mortem room, although in the very few cases recorded of death after spontaneous pneumothorax in the apparently healthy a ruptured air vesicle has been found to be the cause.

It seems to me that when a definite annular shadow is shown in the lung by X rays there is probably a cavity, but that if on subsequent radioscopic examination that shadow is not to be seen, it does not follow that the cavity has closed. A small amount of secretion in the cavity or temporary congestion of its walls may make considerable difference to the radiological appearance. J. Sowerbutts has described[2] the course of a case showing an annular shadow and has discussed the probable causes of these shadows.

Although I believe that in most cases these "X ray" cavities are genuine tuberculous ones, I think they should be considered apart from the other three types of cavity. They do not produce symptoms and are consistent with a long life. It seems to me quite wrong to alter treatment because such a shadow appears on radiological examination. The presence of an annular shadow is not an indication for artificial pneumothorax or any other special form of treatment. I have already stated that these shadows are only found in tuberculous cases, and of course the tuberculous condition will require treatment apart from the "X ray" cavity.

DRY CAVITY WITH FIRM FIBROTIC WALL

It also seems to me to be bad practice to institute special treatment for the dry cavity with a firm fibrotic wall. In this case the presence of the cavity can be discovered by physical signs and confirmed by radiological examination after introducing lipiodol. Treatment intended to collapse the cavity usually fails, and often does harm, so is best avoided if the general condition of the patient is good and there is little or no sputum.

I know a woman of 75 who has a large cavity in the upper part of the right lung and, according to the out-patient notes at Brompton Hospital, has had it for over 50 years. She occasionally gets a little bronchitis, and at intervals tubercle bacilli have been found in the sputum, but on the whole her general health remains good. It would be wrong to try to collapse the cavity, and would have been equally wrong 10, 20, 30 or more years ago. I have seen several patients with this type of cavity doing well until pneumothorax or thoracoplasty had been performed in order to collapse it. There are usually areas of adherent pleura and adhesions and, even if these can be cauterised, the fibrotic condition of the lung prevents collapse of the cavity and it is only the unaffected part of the lung that collapses. Similarly with thoracoplasty the size of the lung is diminished, but in the chronic fibrotic case the cavities are not collapsed, as can be demonstrated by the injection of lipiodol after the operation.

In every clinic there are chronic fibrotic cases in which cavities have been successfully collapsed by pneumothorax and cauterisation of adhesions, and sometimes by pneumothorax alone. Many such cases are reported in the literature, but one is often left with the feeling that the patient was doing well before the treatment was started. Rupture of the cavity into the pleural cavity, cutting lung tissue with the cautery or the development of pyopneumothorax, are very definite possibilities and, although it is argued that a cavity is a potential danger, one should remember that certain methods of treatment are themselves dangerous. Experience teaches that life is prolonged by artificial pneumothorax in the early infiltration and subacute fibro-caseous stages of tuberculosis of the lung, but that it is shortened by pneumothorax in the chronic fibrotic stage.

There are exceptions to prove this rule, one being success which occasionally follows the collapse of a cavity producing symptoms in a chronic fibroid case.

FIBROTIC CAVITY CONTAINING PUS

In these cases life is rarely prolonged and the patient is generally seriously incapacitated; apart from this the sputum is unpleasant to the patient and a danger to others. An attempt, therefore, should be made to close the cavities and the best means is pneumothorax. Even in cases where radioscopy shows dense shadows and these, together with the physical signs, make it appear that pneumothorax will be impossible, it is often found that the lung collapses quite well, and if there are adhesions it may be possible to divide them and to get a satisfactory collapse. This method of treatment should always be tried first, unless of course there are any definite contra-indications to pneumothorax. Sometimes, in bilateral disease with cavities in the upper zone of both lungs, it is possible to produce a partial bilateral pneumothorax with good results. In bilateral cases, however, the treatment is rarely successful.

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[1] THE LANCET, 1932, ii., 707.
[2] Ibid., p. 623.

If the part of the lung containing the cavity is adherent to the chest wall and cannot be collapsed even by cauterising adhesions, but the rest of the lung does collapse, it is bad practice to continue the pneumothorax. In such a case the refills should be stopped and phrenic avulsion, followed by thoracoplasty, performed. If the cavity is at the apex, a partial thoracoplasty may be sufficient, but is less successful than apicolysis in most cases. A complete thoracoplasty is usually necessary, and often gives very good results. If for any reason thoracoplasty is contra-indicated and pneumothorax has failed, sandbags may be placed on the chest for an hour or more two or three times a day in order to restrict the movement of the affected lung and to cause flattening of the chest wall. I know of a patient who supported bags weighing 82 lb. for a quarter of an hour at a time. Weights of 40 lb. are not uncommon.

RECENT CAVITY WITH RAGGED WALL

It is when the cavity is recent and is surrounded by a ragged wall of necrotic tissue that artificial pneumothorax gives the best results and is urgently indicated. Not only does it collapse the cavity, but it tends to prevent the formation of others and to check the spread of the disease. Cauterisation of adhesions may be necessary to make the pneumothorax successful. If pneumothorax cannot be induced, the patient should be kept in bed on absolute rest and sandbags should be applied to the chest over the diseased area. Phrenic avulsion, and still more thoracoplasty, is contra-indicated in such cases, although they may be possible and valuable later when the acute phase has passed and the patient is showing resistance to the infection as evidenced by the formation of fibrous tissue.

CONCLUSIONS

1. A tuberculous cavity in the lung is a potential danger. The danger may be great or small.
2. Treatment of a cavity is not without danger, which is slight in some cases, great in others.
3. The patient should not be exposed to treatment which is more dangerous than the cavity.
4. The annular shadow often shown by radioscopic examination of tuberculous lungs is probably due to a cavity in the majority of cases. In the absence of any symptoms or signs other than those of radioscopy, this type of cavity is not an indication for any special treatment.
5. A dry cavity in a chronic fibrotic case is best treated by the same means as a chronic fibrotic case without cavity. Attempts to close the cavity by pneumothorax or thoracoplasty are usually unsuccessful and often shorten the life of the patient.
6. When a cavity is accompanied by much expectoration, special treatment is indicated, because the disease is very likely to spread and the prognosis is bad. Artificial pneumothorax should be tried first, and adhesions divided if necessary. Failing this, phrenic avulsion and thoracoplasty or apicolysis may be tried, but if these methods are contra-indicated, the lung should be rested by the application of sandbags to the chest wall. Apicolysis is more successful than a partial thoracoplasty.
7. In the acute case with cavity formation, artificial pneumothorax is the best treatment. Failing this, the lung should be rested by sandbags. Phrenic avulsion and thoracoplasty are contra-indicated.

Clinical and Laboratory Notes

LYMPHOGRANULOMA (PORADENITIS) INGUINALE

INFECTION ACQUIRED IN ENGLAND

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With a Note on the Pathological Findings

By G. Marshall Findlay, O.B.E., D.Sc., M.D.
(*From the Wellcome Bureau of Scientific Research.*)

In a paper read before the Royal Society of Medicine[1] last October some account was given of the observations and researches made during the past few years which have led up to the recognition of the pathogeny of a group of conditions severally known as climatic bubo, lymphogranuloma inguinale, inflammatory stricture of the rectum, and genital elephantiasis (esthiomène). It has been shown that they are all due to an infection with an ultra-microscopic virus communicated venereally. Climatic bubo has long been known as a disease acquired in tropical countries. Lymphogranuloma inguinale is the rather unfortunate name which was given by M. Durand, J. Nicolas, and M. Favre, of Lyon, in 1913 to a condition which they described as occurring in France, in ignorance of its identity with climatic bubo. Further, there can be little doubt that this condition, sometimes called poradenitis, was delineated in the writings of syphilographers and others during the past hundred years, though usually referred to under the terms " bubon d'emblée " or strumous bubo.

The interest aroused by the writings of the Lyon observers has led to the recognition of the malady in ever-increasing numbers in continental countries, and in America, while the intradermo-reaction devised by W. Frei in 1925, and the demonstration in 1930 by animal inoculation, of an ultra-microscopic virus as the causative agent by S. Hellerström and E. Wassén, followed by the researches of C. Levaditi and his co-workers and of Marshall Findlay, have placed the means of exact diagnosis on a firm basis. At the time the above-mentioned paper was read allusion was made to the fact that no single case of the disease had been recorded in which the diagnosis was established and in which the infection was proved to have been acquired in this country, and it was stated that though the disease might be rare, cases were probably going unrecognised, a statement which elicited in the discussion the fact that no case had been seen at the St. Thomas's Hospital venereal diseases clinic, and that among 10,000 examinations at the Albert Dock Hospital V.D. clinic no case had been seen, with one possible exception and another doubtful case, the opinion being that cases of the disease were not being missed. At the time there was under care (H. S. S.) at the French Hospital a man admitted for bronchitis, who on examination was found to present the typical clinical picture of lymphogranuloma inguinale. His infection was acquired in London, and the virus has since been recovered in experimental animals. This case therefore is the first proved case of lymphogranuloma inguinale to be recorded whose infection was gained in this country, and I am convinced that similar cases will be recognised if looked for and subjected to diagnostic tests.

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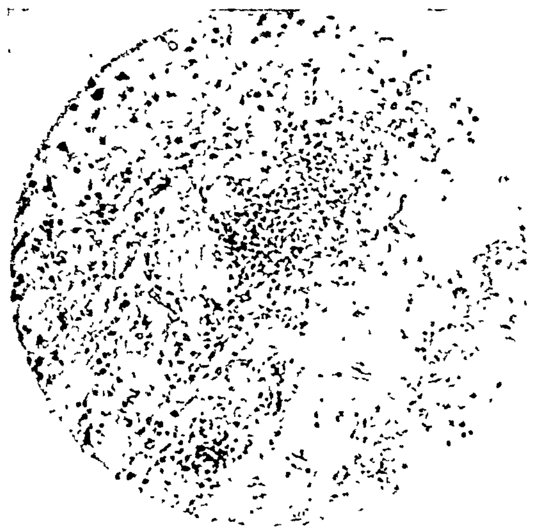
[1] Stannus, H. S.: History of the Recognition of a New Venereal Disease, R.S.M., Sect. Trop. Dis. and Parasitol., Oct. 6th, 1932.

CASE RECORD

The patient, an unmarried Italian, a waiter, has lived in England without leaving the country for 15 years. His history includes gonorrhœa 18 years ago, and some bronchitis of recent years.

On or about August 7th, 1932, he had intercourse with an English girl in Soho. Previously he had not had coitus for many months. On Sept. 12th he knocked against the corner of a table and thought he had injured his left groin. A swelling appeared in the left inguinal region on the following day. Nine days later (Sept. 22nd) he consulted a doctor, who made a small incision into the mass and evacuated some pus and blood. During this ten days he had felt ill and shivery but had continued at work. About the same date as the bubo was opened he developed a cough for which he was admitted to hospital on Sept. 28th.



Section of brain of mouse with encephalomyelitis dying 52 days after intracerebral inoculation of pus from the inguinal bubo of the patient. (× 150.) Mayer's acid hæmalum and eosin.

On examination: temp., 99·6° F.; pulse-rate, 112; marked objective shortness of breath and increased respiration-rate; troublesome cough. Blood pressure, 210/100. Urine: 0·1 g. of albumin, no sugar, no abnormal elements. Blood: red cells, 4,920,000; white cells, 10,800; hæmoglobin, 102. At the bases of both lungs air entry was deficient; moist râles and low-pitched rhonchi present. The liver and spleen were not enlarged; with the exception of the groin no glandular enlargement was detected, and the other systems of the body were normal.

The left groin in its inner two-thirds was the seat of a somewhat sausage-shaped mass the size of an egg with the long axis parallel and just above the fold of the groin. It was hard but elastic to touch and non-fluctuating. The super-jacent skin was of a purplish colour, adherent, but not markedly infiltrated. Towards the outer end of the inguinal mass the small incision persisted unhealed and from it exuded a small amount of sticky whitish pus; the edges of the sinus were neither ulcerated, infiltrated, nor undermined. Below the fold of the groin another gland mass could be seen and felt, having the same characters as the one above; from it opened a small fistula which had appeared spontaneously. There was no urethral discharge, no evidence of gonorrhœa or chancroid infection. In the coronal sulcus on the left side was found what might be a tiny scar. The patient was uncircumcised and did not know whether he had had any abrasion there or not. The anus and rectum were normal.

On the skin of the legs, chiefly the thighs and on the abdomen, there was a scaly papular rash. The Wernicke reaction was positive. Frei's intradermo-reaction was negative both to a pooled climatic bubo antigen prepared by Mr. A. H. Walters, of the Albert Dock Hospital, to a climatic bubo antigen provided by Dr. Hamilton Fairley of the Tropical Diseases Hospital, and to a climatic bubo antigen given to me by Dr. Marshall Findlay, of the Wellcome Bureau of Scientific Research. All the controls were also negative. Some gland juice was withdrawn by aspiration rom the inner pole of the upper mass distant from the original area of softening as an inoculum for use on experimental animals. Treatment by neosalvarsan and bismuth was instituted on Oct. 8th; the patient was kept in bed, dry dressings were applied over the groin but nothing else was done.

Rapid absorption of the inflammatory mass in the groin began after the first injections and the sinuses were healed in two weeks.

The case beyond being a typical one of lymphogranuloma inguinale illustrates two points of interest—the negative cuti-reaction in the presence of an associated syphilitic infection, and the rapid clearing up of the condition under antisyphilitic treatment. These two points have been noted before and cannot afford to be forgotten if a correct diagnosis is to be reached.

PATHOLOGICAL FINDINGS

The material aspirated from the groin gland was inoculated intracerebrally into six mice, each mouse receiving 0·03 c.cm. Of these six mice one died 48 hours later as a result of the injection, while two survived. The remaining three died 6, 14, and 52 days after inoculation, those dying on the sixth and fifty-second days presenting nervous symptoms such as turning in circles, head retraction, and weakness, entirely characteristic of the infection produced by the virus of climatic bubo when injected intracerebrally in mice. The brains cultured aerobically and anaerobically in broth were sterile. Histological examination of these brains showed evidence of a meningo-encephalitis resembling that found in mice inoculated with the virus of climatic bubo. Brain material from the mouse dying 52 days after inoculation was subinoculated into five other mice which died 4, 9, 11, 13, and 21 days after injection with symptoms and histological appearances similar to those found in mice inoculated with material from known cases of climatic bubo.

A CASE OF NÆVOID AMENTIA

By Clifford Allen, M.B. Lond., D.P.M.

(WITH ILLUSTRATION ON PLATE)

The first case of nævoid amentia was apparently described by Kalischer[1] in 1897. Other cases have since been recorded.[2-13] In this country it was studied by Brushfield and Wyatt,[14] who did much to crystallise the facts known about the condition into a definite syndrome. In America, Harvey Cushing's[15] splendid work has thrown much light on the intracranial diseases of blood-vessels.

The characteristics of nævoid amentia are the following: (1) A nævoid condition of the trigeminal region (face or scalp) seldom crossing the midline but sometimes extending over parts of the body on the same side. (2) Fits which may or may not be Jacksonian in type. (3) Signs of damage to the pyramidal system. (4) Varying degrees of amentia. The condition is prenatal, and the extension of the nævus with increasing physical signs and symptoms is unusual. Apparently any degree of hemiplegia and amentia may occur, but the severer types usually die in infancy. The nævoid condition of the meninges can usually be seen by radiography as crescentic areas of calcification. (Fig. I. on Plate.)

The case recorded here is that of an adult woman aged 49.

FAMILY HISTORY

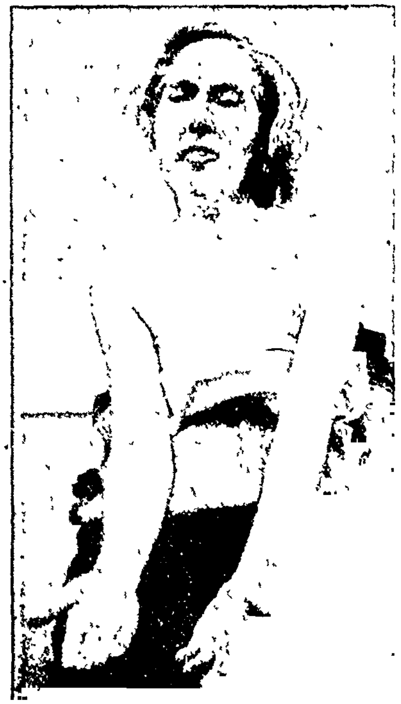
Her mother died, aged 73, from syncope. The father died, aged 69, from "valvular disease of the heart." There are three brothers, all of whom have died. One died, aged 26, from a "low fever." One died, aged 18, from appendicitis, and the other died at 6 months from unknown causes. Out of the patient's five sisters four have died—one of "heart disease," aged 47 ; one of influenza, aged 12 ; one of measles, aged 3½ ; and one of anæmia, in infancy. There is one surviving sister who is alive and well. (The high incidence of vascular disease is probably without significance.) None of the family, other than the patient, suffered from fits, spasticity, or nævi.

PERSONAL HISTORY

Her birth was a normal one. Her father was out of work, and her mother did washing until a few hours before the patient was born ! She appeared normal and had no fits until the age of 3. At this age she fell out of a high chair. She screamed out loudly but did not lose consciousness. She was picked up by her mother and soothed, but when she was placed down she had a fit. She had occasional fits following this. In spite of her epilepsy she went to school and appeared to progress fairly well. She was however promoted with the class, and was only in the fifth standard when she left at the age of 14. She never won a prize at school. Her sister (informant) saw her in a fit at the age of 16 ; all that was observed, however, was that her face was distorted, and the observer was too frightened or unobservant to notice whether there was any Jacksonianism. When the patient left school she stayed at home with her mother. She was incapable of earning her own living, but was able to run errands. She lived with her mother until six years ago, when her mother became ill and died. Even up to the hour of her death she appeared to have no realisation that her mother was dying.

When her mother was buried she asked to be allowed to live by herself, and as she owned a little property, which she had inherited, this was permitted by her relatives. Her financial affairs, however, were soon grossly confused, and she "spent a hundred pounds in no time." She bought a number of superfluous things (such as a vacuum cleaner), and had the one room in which she lived redecorated twice in two days. She had "taught" in Sunday-schools since the age of 18, and she filled her room with religious books and covered the walls with texts.

FIG. II



Photograph of the patient.

For the last two years she has lived in total darkness. This was apparently to prevent the motor-bus drivers at the garage opposite from looking at her. These complaints were apparently based on reference feelings. She soon showed signs of being hallucinated, and complained that these men were "talking scientifically" to her without opening their mouths. She then declared that people used to read out loud everything that she wrote, and that all her business was being broadcast by the wireless.

She became progressively worse. She refused to sleep in bed because she "had too much electricity in her body." She was dirty and insanitary in her habits. She set fire to her room on two occasions, but fortunately without serious result. At last she took one of her pupils from the Sunday-school home and kept this child alone with her all night without informing the child's parents. After this escapade it was obvious that she needed institutional care. She was certified and sent to Bexley Mental Hospital. She has settled down in these simplified surroundings and, although hallucinated and paranoid still, has been able to adjust herself satisfactorily.

PHYSICAL FINDINGS

She is a woman with iron-grey hair and a rather hirsute chin. There is a well-marked nævus almost in the midline of her forehead, but more to the right than the left. (Fig. II.) The optic discs are normal. There is a slight ptosis on the left, and her left eye is placed at a lower level than the right. The eye movements are normal. The pupils react to light and accommodation, also consensually. The palate moves normally. The tongue deviates to the left.

Her head tends to be held slightly to the left with slight raising of the left shoulder. In repose the left arm tends to be held in a semi-pronated position, but it swings normally when walking. There are no contractures, and her left arm is capable of free movement. The grip of the left hand is not so good as the right. When asked to grip tightly with her right hand she is noticed to grip her left fingers also. She does not grip her right hand when making an effort with her left. She contracts the fingers of her left hand when the left supinator jerk is being elicited. The musculature is poorer in the left arm, and there is a certain amount of agenesis. The limb is shorter, the bones feel smaller, and the fingers are thinner. The abdominal reflexes are present and normal. Her left leg is very slightly smaller than the right, but the difference is almost negligible. The knee and ankle reflexes are equal and normal. Both plantars are flexor. Sensation is normal. She has no physical signs of disease in her other systems.

INTELLECTUAL TESTS

She is rather dull and simple in her conversation. Although she was a Sunday-school teacher she could not say who Ananias, Aaron, or other prominent biblical characters were. She thought a Pharisee was one who made his living by telling lies !

The result of various tests is as follows: Burt's graded reasoning test gave a mental age of 7. Porteus tests to the age of 6 were reached. Burt's reading tests gave 8, and the Binet-Simon gave $8^{8}/_{12}$.

The outstanding features of this case are: the circumscribed lesion—practically a monoplegia ; the approximately midline position of the nævus ; the cessation of the fits ; and the age of the patient. The development of a psychosis in one suffering from such a combination of intellectual, physical, and æsthetic disabilities is hardly astonishing.

I wish to thank Dr. G. Clarke, medical superintendent of Bexley Mental Hospital, and the London County Council for permission to publish this case, and Dr. F. O. Walker for the photographs.

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ROYAL HALIFAX INFIRMARY.—The annual report shows that last year there were 4241 new in-patients whose average stay was 17·1 days, and average cost £5 13s. 6d., a reduction of 7s. The average cost per bed for the year was £121 6s. 10d., a saving of £5 12s. 2d. per bed on the preceding year. At 14,632 the out-patients increased by nearly 900.

MEDICAL SOCIETIES

MEDICAL SOCIETY OF LONDON

A MEETING of this society on Feb. 13th, with Sir JOHN BROADBENT, the president, in the chair, was devoted to a discussion on the

Treatment of Peptic Ulcers by Duodenal Feeding

Dr. ERNEST YOUNG said that in America this method was extensively practised, and he thought it had not received adequate recognition in this country. For some years he had used it in most of his hospital and private cases of gastric and duodenal ulcer, and it had yielded better results than any other form of medical treatment. His method was to pass a soft rubber tube of small calibre into the duodenum, where it was retained for at least 21 days. Through this tube the patient received, at two-hourly intervals, seven liquid meals during the day. The main object of the treatment was to secure rest for the ulcerated viscus; as no food passed over the ulcer there was an opportunity of healing. The apparatus consisted of two parts: the thin rubber duodenal tube, and a small irrigator, supported by a filter. The rubber tube, 47 in. long, terminated in a silver-plated capsule. The flow of the liquid food through the tube was regulated by a stop-cock. It was very important that the tube should be as soft and pliable as was compatible with efficiency, because of the length of time it was required to remain in situ. It was his practice to pass the tube in the early morning, on a fasting stomach; the patient was sitting up when it was introduced, and it had been previously moistened with glycerin. When the 23-in. mark was at the teeth, the end of the tube was near the pylorus; no further effort was then made, but the patient sipped water until the 30-in. mark arrived at the teeth, the gastric peristalsis being relied upon to carry the tip of the tube into the duodenum. This last stage might require a few minutes or a few hours. If the liquid withdrawn was watery and acid it indicated that the tip had not yet reached the duodenum. Feeding could begin as soon as the tube entered the duodenum. During the 21 days that the tube remained in position the meals given through it consisted of one raw egg and a tablespoonful of lactose beaten with 8 oz. of milk; with, as an alternative, the egg beaten with 8 oz. of Benger's food and a tablespoonful of cream. If patients awoke in the night feeling hungry, an additional feed of the same character was given. On the evening of the last day of this active routine the tube was removed, and next morning the following diet table was commenced:—

Breakfast.—A scrambled egg, oven toast or breakfast biscuits with a little butter, a teacupful of China tea (no sugar) at the end of the meal.

Lunch.—Boiled fish, sieved potatoes, oven toast or breakfast biscuits, baked custard, a maximum of half a tumbler of water.

Tea.—Two cups of China tea (no sugar) and a few plain biscuits.

Dinner.—Breast of chicken, sieved potatoes, oven toast or breakfast biscuits, junket with a little cream, half a tumblerful of water.

On retiring, sip a tumbler of hot water.

This régime was kept up for 10 to 14 days, and gradually normal diet was resumed, this point being reached in a month or two. At first the tube might cause some soreness, but this was short-lived; in only one of his cases was it so great that the treatment had to be discontinued. If duodenal discomfort occurred shortly after the feeding, he gave a spoonful of alkaline powder in water by the mouth with the feeds for a day or two, and that generally disposed of the feeling. If the patient was constipated, a liquid aperient could be given through the tube: if anæmic, iron and arsenic could be given in the same way. The mouth should be washed two or three times daily. It was unnecessary for the patient to be kept constantly in bed.

With large gastric ulcers on the posterior wall, or a duodenal ulcer with a long history, it might be necessary to retain the tube for from four to six weeks, a control radiogram being taken every ten days. If in three weeks the X rays showed no change in the ulcer, operation should be advised, for a treatment which did not succeed in three weeks was not likely to do so in a longer course. Duodenal ulcer was more debatable. Dr. Young thought that neither this nor any other medical method should be tried if radiography showed deformity of the duodenal cap sufficient to cause pyloric obstruction. The treatment was suitable for cases of duodenal ulcer which had never healed after gastro-enterostomy. The most striking success in his experience had been achieved in cases of multiple ulcers; he had had six such cases in a few years. Five of them made a good recovery, the sixth had only just completed the treatment. He had followed up 75 cases in nine years: 16 stomach, 53 duodenum, 6 multiple in stomach and duodenum. Eleven of the stomach cases made an excellent recovery, 1 did not respond, and was found to have a malignant ulcer, 1 had an ulcer of the posterior wall and was referred to the surgeon, making a good recovery after gastrectomy; 3 he had not been in touch with. Six duodenal cases he lost touch with, 3 were still under treatment, and of the remaining 44, 11 had had relapses. Most of his failures were among his earlier cases, when his treatment was shorter And latterly he had been able, as a result of experience, to make a wiser selection of cases. He believed that for appropriate cases this method was shorter and more acceptable, and produced more satisfactory results than any other form of medical treatment.

A RADIOLOGIST'S VIEW

Dr. G. R. M. CORDINER said that one direct radiological sign on which gastric or duodenal ulcer could be diagnosed was visualisation of the ulcer niche. Gastric ulcers could be grouped into those with hyperfunction, those ulcers with compensated function, and those with decompensated function. The associated pylorospasm became more marked the nearer the ulcer was to the pylorus. In explaining the symptoms in these cases he emphasised the importance of a weakening of the whole digestive musculature owing to the continual effort needed to deal with obstruction. He thought that the first and second degrees of gastric ulcer should be treated entirely medically, provided that the treatment was adequate and that a sufficient standard of cure was demanded. Treatment of third-degree ulcers should be surgical. There was no difficulty in differentiating between the first and second degrees, but sometimes it might be difficult to state, radiologically, whether a given ulcer should be classified to the second or third degree. In ulcer of the second degree, if treatment by the tube was continued for a fortnight, there was a rapid return to normal function or hyperfunction, whereas in a third-degree condition, with pyloric antral stenosis, there was a marked delay in evacuation time even after the fortnight of intubation. With regard to the standard of cure, the clinical proof of cure was made more difficult because peptic ulcer tended to remain latent for months, even years, and absence of symptoms did not necessarily mean healing of the ulcer; only radiography could confirm or refute the clinician.

DISCUSSION

Sir WILLIAM WILLCOX held that the method described represented a really valuable advance. During the last four years he had adopted it for almost all the cases of gastric ulcer which had been under his care at St. Mary's Hospital. Under the old régime healing of the ulcer was a very slow process; and some of the cases which had been cured with the tube were ones which he would formerly have handed over to the surgeon. With regard to duodenal ulcer, his experience was that when the ulcer was not too near the duodenum treatment with the tube had been most successful, but if the tube was passed a good distance along the duodenum it was especially valuable when the ulcer was in the pylorus or an inch or so beyond. It was important to remember that in all these cases there was a general tendency to ulceration; the ulcer should be regarded as a localised manifestation of a general toxæmia.

Dr. STANLEY WYARD agreed that intubation was by far the best method of treating gastric and duodenal ulcer. Some of his patients complained of acid regurgitation with pain every time food was passed, and he found that in some this did not yield to alkaline powder, but was dissipated by giving minute doses of sulphuric acid by the mouth—i.e., acid sulph. dil. ♏v.

Mr. A. E. MORTIMER WOOLF spoke of a case of double ulcer which seemed about to perforate, and was in such a bad condition that the speaker dared not operate. He had asked Dr. Young whether the tube treatment would help in that case, and to everyone's surprise the ulcer had healed under the treatment, and the patient had remained well five years.

Mr. A. J. WALTON said that to-day no surgeon stated that no cases of the kind could be cured medically, nor could a physician be found who did not admit that surgery was sometimes the only remedy. There was a group of cases in which there was a short history (three or four months) of ill-defined attacks, in which there was not so much real pain as discomfort. He regarded these as no more than duodenitis, and under no circumstances would he operate on them. They showed no more than a hyperperistalsis and over-activity of the duodenum; no nitch was visible by X rays. Also there were cases of erosion, with either obvious bleeding or some occult blood, and these were not for surgical treatment either. If, on the other hand, there had been repeated hæmorrhages and a long history, he believed that operation should be carried out; and it was also required in cases showing fibrosis and definite stenosis. If a patient over 45 gave a short history of dyspepsia and his past history had been gastrically clear, his working rule was to regard the condition as carcinoma unless there was proof to the contrary. He had operated upon 1677 cases of peptic ulcer, and 822 of them were duodenal; yet it was almost universally accepted that duodenal ulcers formed four-fifths of all the ulcers in this region.

Dr. GEOFFREY BOURNE said that in the few cases in which he had tried it, the intubation method had given him better results than any other.

Dr. G. E. VILVANDRÉ said that pylorospasm was a diagnostic sign of the existence of duodenal ulcer. The really early sign of gastric ulcer was not the visibility of the nitch, but a localised spasm in that segment of the stomach which was supplied by the nerve serving the area; in other words, it was the reaction of the stomach to the presence of the ulcer. He felt very strongly that a number of surgeons who were carrying out gastro-enterostomy should not do so.

Dr. T. IZOD BENNETT said that in the last ten years 1200 cases of peptic ulcer had passed through his out-patient clinic, and a few—he did not know the proportion—had needed surgery. None of that large number had had duodenal tubage, and it would be wrong, he thought, to conclude that this method was necessary. His three-phase criticism of the method was: (1) it was tiresome to the patient, (2) it was an expensive form of treatment, (3) as a rule, it was wholly unnecessary. He agreed that there was now no radical difference of opinion concerning these cases among surgeons and physicians.

The PRESIDENT said there could be no doubt that duodenal feeding was often very successful.

Dr. YOUNG, in his reply, did not agree with Dr. Izod Bennett that the treatment was expensive. It did not distress the patient, for scarcely an ache or pain was complained of during the whole treatment.—Dr. CORDINER also briefly replied, emphasising the fact that other conditions besides ulcer would cause pylorospasm.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY

A DINNER meeting of this society was held on Jan. 13th, under the presidency of Dr. JULIUS BURNFORD, when Mr. TIMBRELL FISHER opened a discussion on

Arthritis

He said that although in many ways an attractive hypothesis, the infective theory in the ætiology of arthritis could not be said to be definitely proved. Most workers agreed that bacteriological examinations of the joint fluids or tissues removed at operation and the blood of arthritic patients had been either negative or inconsistent. It had been suggested that the absence of organisms was due to the fact that the joints were hypersensitive and reacted in an allergic manner to minute doses of microbic toxin. Possibly some joints reacted in an allergic way, while others were actually invaded by organisms. The evidence appeared to be steadily accumulating that the streptococcus played an important part in the ætiology of chronic arthritis, and this raised other interesting problems such as the relation of these forms of arthritis to acute rheumatism. The ætiological problems attaching to arthritis merited attention from bacteriologists and biochemists. Such research could best be undertaken in an arthritic unit, where early cases could be exhaustively investigated and facilities for in-patients were available. Dealing with orthopædic aspects of the disease, Mr. Fisher said that in the more acute stages, when muscular spasm was prominent, every effort must be made, by extension or otherwise, to prevent deformity. The aim should be the retention of a mobile joint, but since ankylosis might occur, the joint should be placed in the optimum position, if necessary in some light form of apparatus, which was easily removable for physiotherapy. Every effort must be made in recumbent cases to avoid faulty posture. It was often overlooked that if a patient was propped up in a sitting posture in bed, a serious flexion deformity of the hips was apt to develop. The knees were often flexed over a pillow to give greater comfort, at the expense of crippling flexion deformity, and the feet, owing to the pressure of the bed-clothes, assumed a position of talipes equinus or equino-varus. The prevention of deformity in arthritis was of inestimable importance.

DISCUSSION

Sir **FREDERICK HOBDAY** made some observations on arthritis as found in horses; he mentioned that a good deal of arthritis was occasioned through working the animals before they were mature.

Dr. H. H. **MILLS** held that much osteo-arthritis was preventable if only there could be continued into later life, particularly during adolescence, the careful surveillance which was begun in infant welfare centres.

Dr. W. S. C. **COPEMAN** recalled the need for more accurate terminology. Whatever these cases might be called, they fell into two groups, the osteo-arthritic and the rheumatoid arthritic groups; but those writing papers on the subject often used different and confusing classifications. Dr. Copeman also referred to Mr. Fisher's statement that he was not sure of the cause of the alteration in blood-sugar tolerance in rheumatoid arthritis. Pemberton, in America, had suggested that it might have something to do with the fact that large areas of the capillary beds were closed off in this disease, the patients being always extremely pale and cold. Dr. Copeman had taken the blood-sugar tolerance of a patient with rheumatoid arthritis, which was abnormal, and then gave the patient a hot bath; immediately he repeated the test which then gave a normal result.

Dr. **CLEMENT NICORY** mentioned some work done under the auspices of the Medical Research Council which suggested that an excessive protein diet led to constipation and rheumatism.

Dr. **GERALD SLOT** said that it had been found at Carshalton the young children suffering from rheumatoid arthritis had been greatly benefited by intravenous injection of heavy metals (gold), but neither in acute rheumatic fevers, in its cardiac manifestations, nor in choreas, had any good results been obtained by this method of treatment. At Hammersmith Hospital also some cases of arthritis in patients not very old or weak had responded extremely well to heavy metal therapy.

Dr. **GORDON DEWES** said that the principle of rest for arthritic animals might be applied to children, who might, instead of being given salicylates, be kept in bed for some weeks and have their exercise restrained until they reached puberty.

Dr. T. S. **KEITH** suggested that there was a condition of vascular stasis in which the streptococcus thrived. He believed that streptococci were frequently present in the synovial fringe, but he did not think they were causal agents.

Dr. **HOWARD STRATFORD** said that if cold acted on the capillaries in the neighbourhood of the joint and caused congestion, the blood-supply to the joint might be lowered, so that organisms got a chance of causing trouble.

Dr. D. M. **SCRIMGEOUR** discussed a classification on the basis of X ray appearances; Mr. G. B. **WOODD-WALKER** referred to the mechanical arthritis set up by deformity; Dr. F. McG. **LOUGHNANE** mentioned the importance of the genito-urinary system as a focus of infection; and Mr. H. L. **ATTWATER** referred to the frequent association in middle-aged men of mild prostatitis with aches and pains in the joints.

WEST KENT MEDICO-CHIRURGICAL SOCIETY

A MEETING of this society was held at the Miller General Hospital, Greenwich, on Feb. 10th, when Mr. P. H. **MITCHINER** gave an address on

When to "Wait and See" in Acute Appendicitis

He began by speaking of the controversy excited by Sir James Berry's paper on the value of expectant treatment in acute appendicitis.[1] In the main he agreed with Sir James's teaching, but he could not associate himself with the implication in this paper that operation should not be undertaken in the first 48 hours of an attack of acute appendicitis. If a case is definitely seen within the first 12 hours after the onset of the attack, when there is so often uncertainty as to the exact diagnosis, he can see no harm, he said, in waiting for a few hours in order that other symptoms may manifest themselves and investigations be carried out; for in his experience no harm will result for waiting 24 hours after the onset of an attack of appendicitis before operating.

It must be remembered that there are definitely two types of acute appendicitis. Firstly, the type with obstruction of the lumen of a previously inflamed and usually kinked appendix by a concretion, and, secondly, the general infection of the appendix wall, probably commencing, as a rule, in the submucous coat, which is usually associated with a mild septicæmia from a blood stream infection. In the obstructive type the initial signs are intermittent colic, and pain usually starting at the umbilicus and subsequently settling over the appendix. This type in the early stages is very apt to be confused with ureteric colic associated either with stone or *B. coli* pyelitis, or with a true appendicular colic in children due to the presence of worms or some other irritant in the lumen of the appendix, or enlarged mesenteric glands. It is only a careful investigation of the urine, radiography, and examination of the tongue which will elucidate the diagnosis in these cases. Such an examination may entail the loss of a few hours, but it is a loss which can be met with safety, for, in the speaker's experience, so long as this type of appendix is removed within 24 hours after the onset of the attack perforation will not have occurred.

In the second type of attack a patient has often had some mild septicæmic condition associated not infrequently with sore-throat, possibly a mild influenzal attack, and the classical signs of appendicitis are present, the temperature seldom, however, raised above 99° F. excepting in small children where a temperature up to 101 ° F. may be met with. The pain again usually begins in the umbilical region, and the "appendix" whose symptoms start and remain at McBurney's point should be regarded with suspicion. Differential diagnosis in these cases is often difficult. Apart from cases of infective gastro-enteritis and disturbances due to unsuitable food, a perityphlitis may occur both in influenza or pneumonia, and referred pain in a spinal meningitis, or inflammatory conditions in the region of the diaphragm, not infrequently give rise to difficulty in diagnosing the condition correctly. In appendicitis, however, the tongue is usually coated and the breath has a peculiar and characteristic mousy smell.

In young girls rupture of a blood cyst in the ovary is extremely difficult to diagnose from appendicitis but in these ovarian cases the tongue is usually clean and the pulse unduly rapid for the slight temperature present. Salpingitis of course constitutes a great difficulty in diagnosis, and often such a diagnosis is impossible apart from operation.

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[1] Trans. Med. Soc. Lond., 1932, lv.; THE LANCET, 1932, i., 1027.

In these early cases, therefore, seen within the first 12 hours where the diagnosis is doubtful, Mr. Mitchiner advises waiting for a few hours so that thorough investigation of the case may be carried out; many unnecessary operations will be thereby prevented. In cases seen from 12 to 48 hours after onset of the attack the diagnosis is usually obvious, and surgical operation is the only right and proper treatment in all these cases, for however mild the attack may appear clinically it is probably impossible to predict the ultimate course. Moreover, the mortality of operation in this period, when the inflammation is limited to the appendix, is no greater than that of operating on a quiescent appendix.

After 48 hours the patient may manifest one of two conditions. The inflammation may have localised to the immediate neighbourhood of the appendix, in which case the rest of the abdomen is flaccid and not tender, and a mass will be felt in the right iliac fossa or on rectal examination on the right side of the pelvis. In these cases the policy of "wait and see" is the only sound one. Where such a policy is adopted, as it is at St. Thomas's Hospital, it is necessary to keep the patient at rest, to give a diet consisting of fluids only, and to see that neither enema nor aperient is given. The patients must, however, be kept under daily observation, for in a very small proportion (about 0·5 per cent.) the local resistance may be overcome and a spreading peritonitis develop, while in about 1 per cent. the abscess becomes adherent to the abdominal wall and needs external incision.

It is the pulse which must be watched. The temperature is bound to be raised in the presence of a localised septic focus which here exists, and a certain amount of paralytic distension of the bowel is always met with. The only indication then for operation in these cases is a rising pulse-rate. "When I was a dresser at St. Thomas's Hospital," said Mr. Mitchiner, "these appendix abscesses were opened and drained across the peritoneal cavity which had previously been packed off. Even with this operation, however, the mortality was approximately 20 per cent. from peritonitis, which spread in spite of the packing-off of the operation area. It then became the custom to open the abdomen and leave a tube down to the appendix mass so that the pus might point along this when adhesions had formed around the tube. We soon discovered, however, in these cases that pus never did come up the tube but that the temperature dropped and the mass resolved. The next step was the substitution of a thin rubber drain for the tube, and this was quickly succeeded by an exploratory laparotomy when, if the mass was found to be isolated, the abdomen was closed without drainage. The results of this operation were excellent, but it struck some of us that it was submitting the patient to an unnecessary anæsthetic and operation, and so we took to observing the cases where a localised mass was present, and we found, as already stated, that the vast majority settled down provided all aperients and enemata were avoided."

In the second type of case met with after the 48 hours, perforation or gangrene has occurred in the appendix without localisation of infection by peritoneal reaction. No mass can be felt usually, and the pulse-rate will be found to *be rising steadily if a* half-hourly count is taken. More or less general rigidity of the abdomen is present, indicating a spreading peritonitis, and calling for urgent operation.

In cases of appendicitis of the "ambulatory" type, where the patient goes to the doctor with a mass in the abdomen which has been present possibly for ten days or so, it is always advisable to wait and see, the patient being treated on the lines previously indicated. In cases where expectant treatment has been adopted in dealing with the localised appendix mass, a subsequent appendicectomy should always be performed in about two or three months time, unless an acute attack supervenes, as it occasionally does, during this period of waiting, when immediate appendicectomy should be carried out.

Year.	* Quiescent.	Died.	Acute. First 48 hours.	Died.	Abscess present.	Died.
1904	—	—	21	9	83*	16
1914	188	2	258	20	52	5
1924	175	3	163	2	24 (No op.)	1
1932	124	0	246	11	24 (4 op.†)	3
—	—	—	—	—	47‡	1

* Operation in all cases. † 3 died, 1 alive.
‡ General peritonitis present.

In conclusion, Mr. Mitchiner summarised the figures for appendicitis at St. Thomas's Hospital for various years (see Table).[2] "From the foregoing remarks," he said, "you will see that I advise expectant treatment in all cases of appendicitis not seen earlier where localisation of the infection has taken place by the end of the first 48 hours after the onset of the attack. This treatment will be successful only if combined with rigid avoidance of the administration of any *aperient or enema.* I further suggest that it is advisable during the first 12 hours of an attack where the diagnosis is in doubt, to wait the few hours necessary to carry out the investigations which will definitely confirm the diagnosis of appendicitis before *operating.*"

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY

At a meeting of this society held in London on Feb. 9th, with Prof. W. LANGDON BROWN, the president, in the chair, a paper entitled

Pathomimia Cutanea

was read by Dr. W. J. O'DONOVAN. In the course of his paper he pointed out that certain skin lesions are associated with certain types of personality. For instance, one of his patients, a man with cheiropompholyx, was, like others, suffering from this condition, nervous, and complained of inability to sleep and a poor appetite. Yet his face was placid, and his girth was increasing. In the same way patients with varicose ulcers display certain common characteristics. They are usually dirty, slovenly, and self-satisfied people, who cannot lift themselves out of dependency. Sometimes the ulcer may be the only means by which they can get individual care and attention. Local pruritus had similar psychological interest. Patients with pruritus ani, for example, are egocentric, with a tendency to exhibitionism and logorrhœa. The itching occurs at times of nervous stress, and the part played by suggestion in reinforcing local treatment further indicates the functional nature of the condition. "Red legs," a discoloration of the legs from ankle to knee produced by scratching, recalls the glove and stocking anæsthesia of hysteria, and suggests that "red legs" may correspond to the layman's hysterical itch.

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[2] St. Thomas's Hosp. Rep., 1904, xxxiii.; *Brit. Jour. Surg.*, 1932, xix., 410,

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ROYAL SOCIETY OF MEDICINE

SECTION OF THERAPEUTICS AND PHARMACOLOGY

At a meeting of this section held on Feb. 14th the chair was taken by the president, Dr. E. P. Poulton, and a discussion on

Iodine Compounds in Thyroid Disease

was opened by Prof. C. R. Harington, who dealt with the development of the treatment of goitre. Seaweed soup was said to have been used by the Chinese many centuries before Christ, and in the thirteenth century A.D. Arnaldus de Villanovus had prescribed a seaweed. Burnt sponge had been recommended in the sixteenth century and had been taken up in the middle of the eighteenth century in this country as a secret remedy; this had been finally revealed to a Dr. Wiliner and published by him in 1799. It had been repeated in Parr's Medical Dictionary in 1809 and had been regarded as a valuable if empirical remedy. During the Napoleonic wars there had been a shortage of nitrates for gunpowder and an extract of burnt seaweed had been substituted by one manufacturer for burnt-wood ash. As a result iodine had been isolated in 1812, and seven years later its presence in sponge ash had been demonstrated. Some years later a Genevese physician had independently tried iodine for goitre, with great success, but not without undesired results. Imprudent use of iodine had led to its schedule as a dangerous drug by one Swiss canton. The internal secretion of the thyroid had been demonstrated by G. R. Murray in 1891, and iodine had been discovered in it in 1895. The morphological chemical studies of J. Marine had shown the inverse relationship between iodine concentration and degree of glandular hyperplasia.

These observations formed the basis of iodine therapy in Graves's disease. Many adverse reports on this treatment had appeared, and bad results were ascribed to the fact that the disease was due to over-production of thyroid secretion. Another theory regarded it as a dysthyroidism rather than a hyperthyroidism, the excess of secretion owing its toxicity to want of iodine. This theory lacked experimental support; thyroxine short of iodine had never exercised any toxic effect in the laboratory. Moreover, iodine only benefited Graves's disease for a short period: during the response to iodine therapy, which was a rapid involution of the gland with storage of collagen. The "thyroid diarrhœa" theory of Kocher was more satisfactory; iodine by pressure-retention temporarily arrested the too rapid release of secretion and could only be regarded as a palliative. The cause of Graves's disease was probably outside the thyroid; in the adrenal or the pituitary. The most suitable mode of administration of iodine was in the form of diuretyrosine. The biological synthesis of thyroxine was probably from tyrosine, and one stage could be saved if the iodine was so given; there was no risk of iodism.

THE CLINICAL ASPECTS

Dr. R. Gardiner-Hill said that most simple goitres in London were sporadic, appearing during a crisis of female life or after an infective illness. Marked changes could be detected in the thyroid after natural and experimental infections. There were two types of simple goitre; the diffuse colloid and the nodular. The latter was probably a late stage of the former, though some writers regarded them as separate entities. Iodine seemed to have very little effect on the nodular type, but then nothing had any effect on this form; iodine should be given prophylactically in these cases in times of stress. Care must be exercised, as toxic symptoms had been said to follow iodine therapy. Iodine was of value in the very early stages of the colloid type, and might cause disappearance of the swelling if given within the first two years. It had also great prophylactic value, in times of stress like pregnancy, and in endemic areas.

In primary Graves's disease iodine was of transient value; if given continuously its effects passed off. Belgian workers, however, had recently claimed to be able to control these cases with iodine, increasing the dose whenever the basal metabolic-rate rose. Few physicians in this country would be so optimistic. With medical treatment alone primary Graves's disease always seemed to relapse. The gland showed a striking response to iodine at first, apparently becoming almost avascular; this response was a valuable preparation for operation. Not all glands reacted equally well; the small fibrotic glands which became toxic at the climateric did not harden up in the same way. In secondary Graves's disease the action of iodine was uncertain; there were many expressions of opinion but no well worked-out series of cases. There were two types again; diffuse and nodular. In Dr. Gardiner-Hill's records a very large proportion of both groups had started at puberty; the diffuse glands were in the younger patients and the nodular in the older. Nearly all the diffuse cases had been treated with iodine, which had not produced exacerbation of symptoms. Iodine had not controlled relapses but seemed to have benefited the patient after removal of septic foci. The diffuse type seemed best controlled by mild doses of X rays together with iodine. In the nodular group iodine must be given with caution, and the initial striking improvement was less often seen. The type should be treated surgically.

DISCUSSION

The President referred to Maurice Campbell's geographical work, which suggested that something in the thyroid caused toxic goitre. The best vehicle for the French tincture of iodine was tea. People in endemic areas must eat meat, which contained iodine; or were the victims, he asked, all vegetarians?

Mr. T. P. Dunhill said that iodine did a great deal of good for a limited time to a large number of patients. It should be given to early cases, but only with great caution, lest they be given so much and be kept from the surgeon so long that they lost a chance of surgical relief. Iodine would not "make any patient safe" for operation. In the primary toxic goitre it was very useful. A young patient developing toxic symptoms had plenty of gland epithelium left and would tolerate iodine, but the amount of iodine must be graded according to the amount of epithelium present. It was valuable in nodular goitres if given carefully. If it was not doing good it should be stopped and the surgeon called in.

Dr. George Graham emphasised the importance of dosage, advocating not more than grs. 1 to 1½ in the day. Larger doses might make the gland very hard, and operation almost impossible. Very few cases could be treated with iodine altogether. A very small dose—gr. ⅓—was useful after operation in many cases. Diuretyrosine might be expensive but iodine was very cheap.

Mr. C. A. **Joll** questioned whether iodine deficiency were the cause of endemic goitre; there was, he said, *considerable evidence to the contrary*. Sporadic colloid goitre was not infrequently seen in London, where there was an ample, mixed, iodine-containing diet. Dramatic results from iodine in primary thyrotoxicosis were only obtained in about 30 per cent. of cases, and a definite proportion showed no response at all. He usually began with a dose of 5 minims three times a day. The wide dissemination of optimistic statements about iodine had had the unfortunate result that most patients who reached the surgeon had already had iodine treatment and were very bad surgical risks. Iodine should be used as a preparation for operation. In secondary thyrotoxicosis large doses were *not of great value* after operation. Post-operative iodine should be given according to the state of the patient.

Dr. A. W. **Spence** defended Marine's views on the ætiology of goitre: iodine deficiency, which might be absolute or relative to the needs of the body. Rabbits fed on cabbage developed large hyperplastic goitres and Marine was trying to isolate the responsible substance, which seemed to be cyanine. Dried cabbage did not produce hyperplasia, which therefore was probably not due to an iodine deficiency. Definite hyperplasia was induced by injections of small quantities of cyanide. The cyanide prevented tissue *oxidation and the thyroid produced more thyroxine* to overcome the block. In the future some more fundamental substance than iodine would be found for therapeusis. A substance derived from suprarenal cortex would prevent the cyanide hyperplasia.

Dr. W. **Cramer** pointed out that the active hormone of the thyroid was secreted into a closed space—unlike any other hormone in the body. Possibly the real secretion was normally into the peripheral vessels of the acinus and only the excess appeared in the lumen. When the acinus was full the cells were pressed against the blood-vessels and no secretion could pass out. There was no great vascularity *in simple goitre*, but in exophthalmic goitre these vessels were very widely distended. If the distension could be reduced the condition might be alleviated.

Dr. **Gardiner-Hill**, in reply, *said that* he had recently used 10 minims of Lugol's solution three times a day as a pre-operative measure, but surgeons did not like too hard a gland. The most vascular goitres reacted best to iodine.

Prof. **Harington**, in reply, said that there was no form of experimental goitre that could not be prevented by iodine. If iodine deficiency was not the universal cause it was the commonest cause. The soil might be deficient in iodine near the sea, and the vegetables and the flesh of grazing animals would also lack iodine in these areas. Diuretyrosine was quite cheap.

CORK CLINICAL SOCIETY

Prof. C. Y. **Pearson**, in opening the inaugural meeting of this society on Jan. 27th, expressed his pleasure at being elected honorary president, and spoke of the importance of such societies to the medical profession. He urged that every member should try to contribute something so that it should have th advantages that come from regularity in attendance mutual *criticism, and the promotion* of professiona cameraderie and coöperation.

Prof. **John Dundon**, the president, then reporte the case of a man, aged 55, who had double castration performed 16 years previously for tuberculou orchitis and epididymitis, and now showed signs o renal and vesical tuberculosis; Prof. J. M. **O'Donova** described three cases of rupture of the lung in th course of *artificial pneumothorax treatment* fo pulmonary tuberculosis; and Dr. G. A. **Barte** read notes on a case of

Myringomycosis

The patient, a *young woman, complained* of discomfort, itchings, occasional severe pain, deafness and discharge for 14 days from the right ear. Examination revealed a thick membrane like blotting *paper covering* the membrana tympani and th adjacent canal walls. The membrane was greyish i colour, and there was a fur growing from the uppe portion; in this fur were minute droplets of blac pigment. The membrana tympani was somewha swollen but not perforated. Removal of the mass c fungus revealed a roughened, reddened drum membrane and canal wall showing a few punctat hæmorrhages.

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REPORTS AND ANALYSES

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REVIEWS AND NOTICES OF BOOKS

Traitement chirurgical de la tuberculose pulmonaire

By A. CHARRIER and E. LOUBAT. Preface by E. LEURET. Paris: Masson et Cie. 1932. Pp. 366. Fr.65.

THE authors of this book have set out to supply an explicit account of the surgical therapeutic procedures for pulmonary tuberculosis in use to-day, and it is evident that great pains have been taken to make the record as complete as possible. After a short general introduction on collapse therapy, the book is divided into three main parts, which deal respectively with phrenic avulsion, pneumolysis, and thoracoplasty. Each section contains subsections on anatomy, operative technique, complications, indications, and results. In the operation of apicolysis, paraffin wax is advocated as the "fill," although the use of fat and muscle for this purpose is described. Of the three routes by which the operation may be performed the approach through the first intercostal space is advised. The posterior route is described and acknowledged to be useful, but the axillary incision is given three lines. This approach is, however, very commonly used in this country and America and has many points in its favour, with the sole disadvantage of a diminished quantity of overlying tissue. If it is performed by resection of a small portion of the second rib high in the axilla the operation is very satisfactory. Operations for partial thoracoplasty are well described, but some of them, especially those with an approach through the base of the neck, involve a very tedious dissection. The effect of such measures is necessarily very limited, and would hardly appear to justify such extensive operations, but pneumolysis and localised thoracoplastic procedures are looked upon with considerable favour in France. The indications and contra-indications of permanent collapsing operations are discussed, prominence being given to the value of preliminary phrenic avulsion in assessing the activity of the small, apparently healed focus in the opposite lung.

The chapter on the results of thoracoplasty deals with all the authors' reported cases, and they are analysed as far as possible to show the advantages and disadvantages of the different procedures adopted. Figures are quoted to show that the operative mortality is three times greater for the one-stage than for the two-stage operation, that it is greater in males than in females, and for the right side than for the left—all factors to be borne in mind when an operation is being planned. A short section at the end of the book deals with tuberculous empyema; here is outlined the treatment of the condition (1) when uncomplicated, and when associated with (2) mild and (3) severe secondary infection. The teaching here is orthodox, although the attempts to close pleural fistulæ by forced suction which fills the fistula by the prolapsed lung, as advocated by Redaelli, is a new suggestion which, we feel, is only likely to be effective on rare occasions; though in the original account of eight cases treated by this method closure of the fistula is said to have resulted in all.

The wisdom of using local and regional anæsthesia for thoracoplasty is debatable. It has obvious disadvantages, such as results from the mental distress of a conscious patient submitted to an extensive operative procedure, even when pain is almost completely eliminated; the difficulty in obtaining satisfactory and even anæsthesia over the whole operation area; the possibility of excessive absorption, or a specific idiosyncrasy of the patient for the local anæsthetic or adrenaline which is commonly used with it; and, lastly, the tendency of the local infiltration into the tissues to interfere with satisfactory healing, especially in patients whose resistance is primarily low. Where adequate gas-and-oxygen anæsthesia can be combined with local infiltration into the intercostal nerves, its use would appear to obviate most of the disadvantages mentioned above.

This book as a whole presents a balanced view of the modern surgical treatment of pulmonary tuberculosis.

The Biochemistry of Medicine

By A. T. CAMERON, M.A., D.Sc., F.I.C., F.R.S.C., Professor of Biochemistry, Faculty of Medicine, University of Manitoba; Biochemist, Winnipeg General Hospital; and C. R. GILMOUR, M.D., C.M., F.R.C.P.(C.), Professor of Medicine and Clinical Medicine to the University; and Physician to the Hospital. London: J. and A. Churchill. 1933. Pp. 506. 21s.

AN observer of books designed for the medical profession can obtain much quiet amusement by watching the changing fashions. Some years ago the number of text-books issued on physical chemistry for medical students was remarkable. To-day the fashion has changed slightly, and there seems to be a desperate attempt to force biochemistry upon the medical profession. Some 18 months ago the battle was directed against students, but to-day the post-graduate medical student, the practitioner, the physician, surgeon, and gynæcologist are the ones against whom the major attack is waged. This particular example of a long series of such text-books is written jointly by a professor of biochemistry and a physician, both of such high repute that we opened it with pleasurable anticipation. It is, however, disappointing. The book begins with a hotchpotch chapter entitled An Outline of Human Biochemistry. This includes general philosophic considerations, the composition of the diet, the elements of organic chemistry, general principles of enzymes, hydrogen-ion concentration, and so forth. The information given in the book as a whole is sound enough, especially from the biochemical point of view. The most modern and up-to-date section on medicine is that dealing with nephritis. The authors missed a wonderful opportunity when they failed to discuss in detail the biochemistry of Graves's disease; it seems a pity to leave this out, while including long and rather wearisome descriptions of lactosuria and maltosuria. The account of diabetes mellitus, particularly from the clinical aspect, leads one to doubt whether the authors are in the habit of conducting the practical treatment of this disease. The need for biochemistry in medicine is made clear, but the limitations laid down for the relation between physician and biochemist seem hardly likely to lead to the happy and fruitful development of their association. The authors suggest that a chemist, preferably with no medical knowledge, should be chosen as a collaborator by a clinician. Not only should the biochemist be an assistant, and merely an assistant, so far as relationship to the patient is concerned, but it rests with the clinician to "query the results and call for their repetition if he cases could be treated with iodine altogether. A very small dose—gr. ⅓—was useful after operation in many cases. Diuretyrosine might be expensive but iodine was very cheap.

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THE LANCET

LONDON: SATURDAY, FEBRUARY 18, 1933

THE LANCET COMMISSION ON NURSING

Exactly a year ago the Final Report of The Lancet Commission on Nursing was issued. It created more immediate interest than those responsible for its production had ventured to anticipate. The publicity it received was indeed unprecedented for a technical report of that nature, and must be attributed to the widespread appreciation of the curious situation which the Commission was called into being to investigate. At a time when other professions and occupations were grievously overcrowded, and parents and headmistresses were searching eagerly for careers for the rising generation of young women, the hospitals were advertising in vain for candidates for training and for trained nurses to take posts as sisters and staff nurse. Early in 1931, when preliminary inquiries were being made by the Commission, recruitment for this service was found to have reached such an anxious position that of the 600 odd hospitals responding to a question from the Commission on this point, one-fifth failed to secure suitable candidates as sisters, and one-half failed to secure staff nurses and probationers of the standard they required. The reasons given by the girls themselves, and confirmed by parents, headmistresses, and advisory employment bureaux, were variants of the following: long hours, poor pay and prospects, lack of freedom, undue restrictions when officially off duty, and the dual strain of ward work and study, especially since the introduction of State examinations. The gap between leaving school and entering hospital was held to allow the deflection into other less satisfying occupations of many girls who would have taken up nursing had they been able to enter the profession direct from school, or at least to make effective use of the interim between obtaining a school certificate at 16 and the age of admission to hospitals. The 60 recommendations designed to renew the popularity of nursing as a profession were framed by a Commission whose very composition was a guarantee that all points of view would be respected. It consisted of experienced nurses, chairmen of hospital boards, and doctors, reinforced by an economist and women associated one with a secondary school, one with a college, and a third with an employment committee. It is of interest that one of the nursing members of the Commission has recently been elected by State registered nurses to the General Nursing Council, and the selection of the honorary secretary as one of the five members of this Council nominated by the Minister of Health is a gratifying tribute to the work of the Commission.

A survey of the comments made upon the Report of the Commission, at its issue and since, reveals much praise and little specific criticism, and, as was recently pointed out at a meeting devoted to its consideration, one recommendation became an election issue among the candidates for the General Nursing Council. We are aware that the praise accorded to the format, arrangement, and arguments of the Report in some quarters has masked reluctance to admit, in spite of their firm statistical basis, the premises on which certain of the conclusions and recommendations are founded. A number of hospital authorities, following private inquiries, have expressed publicly their satisfaction in finding that the recommendations of the Commission reflect their current practice: from other institutions it has been suggested that with the amendment of regulations in one respect, such as the giving of a whole day off instead of a half day per week, any adjustments required are complete. A more searching study might have revealed points of disagreement between the recommendations of the Report and the existing conditions, which have been ignored as details, but to which the nursing members of the Commission would have attached considerable importance. The limitation of hours of night duty to 57 a week, the allowance of 40 minutes for the main meal of the day and of three clear hours off duty independent of meals every day, and, not least, the scale of salaries of ward sisters, for example, are not details, and reforms here are still wanted. It is clear that the times are hardly propitious for innovations which would directly or indirectly increase the cost of running a hospital, but those which cannot now be adopted could with advantage be tabled for consideration in the future. The need to make changes in conditions of service for the express purpose of attracting candidates for training has during the past year become less urgent, because the influx of suitable young women into the nursing profession has greatly increased. The following factors must here have been influential: (1) the economic depression, during which any form of training associated with board, lodging, and pocket money has obvious attractions; (2) the improvement in conditions of service, as in certain municipal hospitals; (3) the advertisement of nursing as a profession associated with the publicity given to the Commission's report. To what extent each factor has played a part can hardly be estimated. The hospitals will find it safest to assume that (1) is the principal cause, and to make plans for a future in which the resumption of normal economic conditions may again engender a critical attitude on the part of possible candidates to the relative claims of nursing among other forms of social service open to women.

It is an old saying that a square peg will not fit a round hole. In the past the manner of adjustment in hospitals has been to chip the edges off the peg, or at least to rub off its corners, not without risk of some permanent damage to its structure. It is also possible to bring about and maintain a firm and permanent attachment by altering slightly the shape of the hole, and The Lancet Commission have shown how this may be done considers that they do not fit in with the symptoms exhibited."

It is curious that a professor of biochemistry should subscribe to this sort of one-sided criticism. The principles of clinical diagnosis, founded on signs and symptoms, are surely not so firmly established as to justify the physician in querying the figures of a biochemist if the results of observation point different ways. The biochemist might well retort with a suggestion that the physician should look again and make a further examination. We feel that the progress of medicine demands the coöperation of physician and biochemist in some better balanced relation than that of master and servant.

Chemical Wave Transmission in Nerve

By A. V. HILL, F.R.S., Foulerton Research Professor of the Royal Society; Honorary Fellow of King's College, Cambridge. London: Cambridge University Press. 1932. Pp. 74. 5*s*.

Prof. A. V. Hill is well known as an attractive lecturer on complicated subjects. So great is his reputation in this direction that no conference of physiologists seems complete, whether it is held in England, Germany, France, or America, without an address by him. His selection to deliver the Liversidge lecture before the masters and fellows of Christ's College, Cambridge, was welcomed, as will be the small volume based upon his lecture. The book contains little that is not already known to the expert who attempts to follow this extremely difficult and ever-changing subject. But to those not familiar with the remarkable advances made by Prof. Hill and his colleagues the book will be of the utmost value. In it will be found, written in the most interesting manner, a readable description of the modern views on such difficult questions as transmission of impulses through nerves, chronaxie, and the effect of iodo-acetic acid.

A Text-book of Pathology

Fifth edition. By W. G. MACCALLUM, Professor of Pathology and Bacteriology, the Johns Hopkins University, Baltimore. London: W. B. Saunders Co., Ltd. 1932. Pp. 1212. 50*s*.

THIS work requires no introduction to English readers, for it is used as a standard text-book in many teaching schools. Apart from a style which makes easy reading, the special feature of the work is the way in which Prof. MacCallum has planned his teaching on ætiology. Types of injury rather than the location of the lesions are made the basis of classification. To the student who has covered the subject as usually set out in text-books of general and special pathology, this approach gives a fresh and a more comprehensive view of the meaning of pathological processes. The book is therefore of special value to advanced students.

In the fifth edition many alterations have been made reflecting the changes in views in the last four years. A short new chapter entitled Disturbances of Lipoid Metabolism has been introduced to cover Gaucher's and Niemann-Pick's diseases, the lipoidosis of Schüller and Christian, and xanthoma. Rearrangements and additions have been made in the chapters on tuberculosis in order to discuss the importance of the allergic reaction in this disease and its bearing on the form and distribution of the lesions. Recent work on the function of the parathyroid glands and on the importance of the disturbances of the calcium and phosphorus metabolism in rickets is noticed, and short sections have been added to include undulant fever, tularæmia, psittacosis, and post-vaccinal encephalitis. A large number of illustrations have been added and a few of the old ones are represented by substitutes. The reproduction is excellent, and throughout the work the publishers have maintained a high standard.

A Synopsis of Surgical Anatomy

By ALEXANDER L. MCGREGOR, M.Ch. Edin., F.R.C.S. Eng., Lecturer on Surgical Anatomy, University of Witwatersrand; and Assistant Surgeon, Transvaal Memorial Hospital for Children. Bristol: John Wright and Sons, Ltd. 1932. Pp. 609. 17*s*. 6*d*.

THIS book, which has a foreword by Sir Harold Stiles and an introduction by Prof. Raymond Dart, presents parts of applied anatomy in rather a novel way. They are dealt with neither from a regional point of view, nor from a clinical standpoint, but are grouped under multiple headings which have some connexion with both of these outlooks. The result will prove, we think, acceptable to the senior student for whom the work is mainly intended. The parts are presented almost as in a note book, and are illustrated by useful little diagrams. We have read through the work with no little profit and believe it will be found very useful.

Fungous Diseases

By H. P. JACOBSON, M.D., Dermatologist, Los Angeles General Hospital. London: Baillière, Tindall and Cox. 1932. Pp. 317. 30*s*.

A COMPREHENSIVE survey of the fungous diseases on clinico-mycological lines was overdue, and will be welcomed by physicians interested in diseases of the skin. In this compact readable volume is recorded all that the clinician needs to know. For the purposes of nosology the subject is divided into three main groups: (*a*) those infections in which the skin is mainly involved, (*b*) those in which there is or may be a primary cutaneous or mucocutaneous focus with frequent systemic involvement, and (*c*) those with primary systemic effect and occasional involvement of the skin or mucous membrane. No hard line of division can be drawn between these groups, but such a classification is more convenient for clinical purposes than one based on the terminology of the mycologist, or the finer differentiation of cultural appearances in the laboratory. Some knowledge of elementary terminology, however, is essential, and the average need is well met in the introductory chapter on Specific Considerations. The ensuing 100 pages are devoted to a clinical and mycological study of the dermatomycoses—i.e., the ringworms and moniliasis, which includes thrush and the yeast-like infections. These pages will repay close attention. They are full of clinical and therapeutic detail, and the illustrations also will be found of value; those desirous of learning more will avail themselves of the extensive bibliography. The succeeding chapters are devoted to diseases only rarely met with in this country, such as maduromycosis, sporotrichosis, blastomycosis, and actinomycosis. Except for the last named their occurrence is so unusual as to cause quite a stir in dermatological meetings when, perhaps once in a year, a case is exhibited.

This book provides a valuable and accurate exposition of the state of our knowledge in the field of clinical mycology, and should be cordially welcomed.

beds and rigid asepsis. Similarly, in any ward, single cases can be "barrier-nursed." The tendency in recent years in this country has been to construct at fever hospitals series of completely separated glass-walled single-bedded rooms, entered, as a rule, from an outside verandah. In these rooms patients suffering from any infectious condition or none can be safely housed without spread from one room to the next, the same aseptic technique being, of course, imperative. But such units constitute only a small proportion, and usually a quite inadequate proportion of the total accommodation of any hospital and, in any case, essential as they are, cannot solve the problem of the unavowed "incubating" child.

A bold attempt has been made to solve this problem at the new children's hospital at Basle, a detailed description of which has recently been given by E. WIELAND.[3] In considering the means that should be adopted for reducing the introduction of infection to a minimum, the authorities rejected a device which is in use at several continental children's hospitals—viz., the quarantine block into which all new admissions are received. In order to be effective children must be detained there, before admission to the wards, for three weeks, which is the longest incubation period of the common infections. Such long detention would result in considerable disorganisation at an institution of this type. Further, it is pointed out, a quarantine block does not prevent the introduction to the main wards by visitors or careless staff of influenzal infections; or the transference of such infections from child to child. In the construction of the new hospital, which is adjacent to the old, three main principles were adopted: complete separation of the clinics and administrative units from the hospital proper; complete separation of individual ward blocks from each other, structurally, administratively, and as regards nursing: and the substitution of small sick rooms for large wards. The new hospital contains no large wards at all. Although it was recognised that the ideal, from the point of view of introduction of infection, was the single-bedded room, as at the Pasteur Hospital, the expense of such an arrangement made its general adoption impossible. Moreover, the child completely isolated from its fellows tends to become restless and unhappy. The next best was the two-bedded room and, with the exception of a few four-bedded rooms for older children or surgical cases, the hospital block is composed of series of these standard or unit-rooms. Glass was chosen for the walls, not only because of its hygienic and psychological advantages, but because it permits of easy supervision of patients, points which are well recognised in this country. Each room, which is completely self-contained as regards lighting, heating, and sanitary and nursing appliances, has an entrance from a corridor and an exit on to a balcony facing south, the balcony being subdivided by low glass partitions. Abundant sunshine and fresh air without draughts are provided for by high double windows with three divisions and glass doors with panels which may be readily opened outwards or inwards. Direct communication between one room and the next is provided by lockable glass doors in the partitions. These doors were ultimately found to be a weak spot in the design. Three adjacent rooms constitute a complete nursing unit staffed by a sister and nurse. When the hospital was opened it was hoped that this three-room system could be employed with success for a scheme of ward-quarantine. A central four-bedded room was regarded as the sick room proper, the two adjoining two-bedded rooms being reserved for the isolation of any children from the central room who might develop suspicious symptoms. The transfer having been made, the communicating door was locked, thus enforcing access from the corridor. Provided that the well-known aseptic precautions of barrier nursing were maintained, the child in the side ward was effectively isolated. This scheme worked very well as long as one or other of the side wards happened to be available when it was wanted; but, if all three rooms were already occupied, as in times of pressure they were, the system broke down and the only consolation was that the number at risk in the central room was small. WIELAND considers that during the two years' working of the hospital the two-bedded standard room, which may in emergency house a third patient, has proved most successful in minimising infection, although he admits that the communicating doors were a mistake which will not be repeated. He thinks that a happy solution has been found for the modern demand for individualised hospital treatment without undue increase in nursing staff or running costs.

When the old hospital comes to be rebuilt, WIELAND is confident that the two-bed system is the one to adopt. As he remarks, nothing prolongs and increases the cost of hospital treatment for children so much as the appearance of secondary infection. There is nothing to be said, from this point of view, in favour of the large ward. The smaller the ward-unit the better. Where, in existing institutions, the wards are large, it is essential to provide ample isolation accommodation of one type or another for the reception of the suspicious case.

"EARLY" EVIDENCE OF TUBERCLE

AT a meeting of the Liverpool Medical Institution last month several speakers proclaimed the modern doctrine that in the diagnosis of pulmonary tuberculosis physical signs are of relatively little value, and that X ray examination is of paramount importance. Physicians of an older generation are wont to deplore such reliance upon the results of ancillary investigation, as opposed to those of clinical examination. We are often reminded of the old masters of the arts of physical examination who, without the assistance of pathological laboratory or X ray department, successfully diagnosed the presence and nature of disease within the body cavities. Actually it is by no means certain that the skill of the older physicians with little derangement of the organisation of the hospital or (still more important) without harm to the patient for whom the hospital exists. The square is an apt metaphor for the fourfold loyalties which a nurse owes to the patient, the hospital, the doctor, and to her own profession, especially to younger members of it. The fact that these loyalties may conflict, or at different stages of the nurse's career may assume different proportions, must not be ignored. The long years of training are designed to give her not only technical skill, but a balanced outlook. This is not easy to acquire without more leisure than a student of nursing has at her disposal. It is the more important that her previous education should fit her to adapt herself to her surroundings while retaining the critical spirit which will enable her to do her share, later on, in modernising her chosen profession. We welcome, therefore, a certain liveliness on the nursing front, whatever its cause, and are proud that through THE LANCET Commission on Nursing we have been able at least to clear the ground on which these young people will ultimately build, unencumbered by traditions which have lost their significance while retaining those which still have value.

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[3] Schweiz. med. Woch., Dec. 3rd, 1932, p. 1123.

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CONTROL OF INFECTION IN CHILDREN'S WARDS

WHEN children are aggregated in residential institutions it is impossible entirely to prevent the introduction, from time to time, of the common bacterial or virus infections. Apart from the resulting morbidity, and perhaps mortality, the functions of the institution are curtailed for the time to a degree which varies with the type of infection, the numbers and age-groups of those exposed and, above all, with the size and spacing of the sleeping quarters, whether these be the dormitories of a public school or orphanage or the wards of a sick children's or fever hospital. The last-named institutions are far from exempt from the introduction of infections other than those for which the children are actually admitted; the problem of the medical administrator is the safe disposal of the child who, suffering from a disease which may or may not itself be infective, is in addition incubating some unknown infection. If the fact of exposure is elicited on admission suitable measures for segregation can be taken, but, more often than not, no history of exposure is obtainable although it has been systematically sought. The child is admitted to an ordinary ward, the other susceptible inhabitants of which become, in due course, at risk. Against certain of the specific infections which may be introduced prophylactic measures are available. Passive immunisation with diphtheria antitoxin is no new thing and nowadays it is no longer absolutely necessary to close a ward infected or cross-infected with scarlet fever or measles. The source of infection having been, if possible, traced and removed, the injection of scarlet fever antitoxin (with or without the prior performance of the Dick test) or of convalescent or adult-immune measles serum will protect the remaining inmates for a number of days. Provided that all new susceptible admissions are similarly protected whilst danger of infection is still to be apprehended, the ward can continue to function with a high, but not absolute, degree of safety. But even if the similar protective properties claimed for convalescent chicken-pox and mumps serum are upheld upon further trial, these are only measures directed against a few of the specific infections which have already made their presence manifest.

The danger, however, is not confined to the so-called specific infections. With the exception of diphtheria, which is readily controlled, and infections of relatively rare occurrence, like enteric and cerebro-spinal fever which are still more readily controlled, these specific infections are not in themselves lethal. It is the introduction of non-specific infections such as the virus of the common cold or of "influenza" and the mixed flora of broncho-pneumonia amongst children already ill that is much more to be feared, not only from the impossibility of control but from the serious clinical consequences. The potentialities of these non-specific infections have perhaps been more fully appreciated by continental pædiatricians, from GRANCHER onwards, than by ourselves. GRANCHER, more than 40 years ago, realised the danger of ward infections from acute respiratory and intestinal conditions and introduced at the Enfants Malades movable screens which, when placed around cots, provided at least a measure of segregation of potential sources of infection. GRANCHER'S success prompted his pupil HUTINEL, in 1894, to construct at the Enfants Assistés his famous "boxes." These were true cubicles, the glass divisions not reaching to the ceiling, and were formed by subdividing an ordinary ward. The two lateral series of cubicles were divided by, and entered from, a wide central corridor. Each cubicle had its own window and accommodated two children. Boxes on HUTINEL'S plan are still in use in at least one large fever hospital in this country. In true cubicles of this type, provided the use of separate utensils and coats and a scrupulous technique of hand-washing is rigidly adhered to, all the common infections, save two, can be safely nursed without spread by droplet spray from one cubicle to the next. But, as the late FOORD CAIGER and others have shown, measles in the early catarrhal stage, and particularly chicken-pox in its earliest stage, cannot be so nursed without spread. Complete structural separation and asepsis is necessary for the safe management of the two diseases in these early stages. The same limitations apply, as E. H. R. HARRIES showed,[1] to the bed-isolation or invisible barrier nursing advocated by C. RUNDLE and A. H. G. BURTON,[2] though this system is highly successful in other conditions and is also economical, since no structural alterations are necessary. Given a well-trained nursing staff, and this is essential, any ward can be quickly converted to a bed-isolation ward, the system depending entirely upon adequate spacing of the

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[1] THE LANCET, 1924, i., 491.
[2] Ibid., 1912, i., 720.

ANNOTATIONS

THE CHEMISTRY OF CARCINOGENESIS

It sometimes happens that investigations proceeding along different lines converge quite unexpectedly. The latest developments in the chemistry of carcinogenesis are a case in point. First, the patient work of organic chemists on the chemical constitution of cholesterol and allied substances has led to the provisional construction of a constitutional formula whose skeleton—if one may use the term—is a combination of four rings of carbon atoms This ring system is completely saturated, each carbon atom having all its free valencies combined with hydrogen atoms. Secondly, work on the sex hormones has brought about the isolation of the follicular hormone, œstrin, which is capable of inducing an œstral cycle in castrated animals; and the suggestion is made that it is derived from the sterols by a process which involves a partial loss of hydrogen atoms with the formation of a benzene ring in the skeleton of the four rings of carbon atoms. Hitherto these views on the constitution of œstrin have been derived solely from analytical data accumulated on naturally occurring crystalline œstrin: but striking support of their correctness has been provided from the purely synthetic aspect by Mr. J. W. Cook, D.Sc., of the Cancer Hospital, and Prof. E. C. Dodds of the Middlesex Hospital, and their co-workers, whose description of the œstrogenic activity of a ketotetrahydrophenanthren has already been mentioned in these columns. Thirdly, we have the investigations of Prof. E. L. Kennaway and his colleagues of the Cancer Hospital, who have synthesised a number of pure organic compounds capable of inducing cancer when applied locally to the skin. Here again consideration of the known chemical constitution of these carcinogenic substances has indicated the possibility that they are formed from the sterols present in the cells by an abnormal metabolism involving a similar process of dehydrogenation.

Now both œstrus and carcinogenesis have as one of their essential features cellular hyperplasia. It has been found, too, that the injection of coal-tar which can induce cancer also produces œstrus. The next step was therefore to test whether the several pure organic substances of known carcinogenic activity are capable of inducing œstrus. It was found that two of the most potent carcinogenic compounds, 5 : 6-cyclopenteno-1 : 2-benzanthracene and 1 : 2-benzpyrene, are capable of exciting œstrus. In addition several other pure organic substances, not identical chemically with œstrin, have been prepared synthetically which produced œstrus. This interesting story is told very briefly in two letters to *Nature* (Jan. 14th and Feb. 11th) by Dr. Cook and Prof. Dodds. Their experiments show that there are a number of pure organic substances which can induce œstrus, as there are a number of pure organic substances which can induce carcinogenesis, and that some of these substances are both œstrogenic and carcinogenic. Experiments are now being undertaken to show whether œstrin itself has carcinogenic power.

These findings lend strong support to the suggestion of Prof. Kennaway and Dr. Cook that carcinogenic substances can be formed from the sterols of the cell by an abnormal metabolism; but it must not be concluded that this affects the pathological conception of cancer as being at its inception a local disease. Sterols are present in every cell, and it is quite conceivable that when a sharply localised group of cells is placed under abnormal conditions they may locally produce abnormal products of sterol metabolism.

INSULIN FOR THIN PEOPLE

Because of its action in aiding the utilisation of carbohydrate and indirectly the metabolism of fat, insulin has been used experimentally in the treatment of a large number of conditions other than diabetes, of which the marasmus of infancy and tuberculosis are examples. Dr. Harry Blotner, writing from the medical clinic of the Peter Bent Brigham Hospital, Boston, reports[1] the results of treatment with insulin in 19 subjects (7 men and 12 women) who had been chronically underweight for years but were otherwise physically healthy. In all but one case previous attempts to gain weight by dietetic and hygienic means had been made and had proved unsuccessful. During the investigation the patients were recommended to eat a liberal unmeasured diet. The dosage of insulin given was in most cases 10 units three times a day, 20 to 30 minutes before meals; in two cases 10 units were given twice a day, and in three 15 to 20 units were given three times a day. The periods over which insulin was administered varied from 1 to 12 weeks; records were kept of the weight and general condition of the patients before, during, and after insulin therapy, and in seven cases estimations were made in addition of the red cell count, blood-sugar level, blood-urea and non-protein nitrogen concentrations, the basal metabolic rate, and the phenolsulphophthalein excretion. It was found that each of the patients began to gain weight at once when insulin injections were started, and that the gain was either moderately rapid and continuous throughout the period of treatment (sometimes continuing after the injections had been stopped), or else the gain in weight was at first rapid and subsequently became stationary irrespective of whether insulin was continued or not. In 13 cases the weight remained constant or went on increasing after the omission of insulin during periods of observation varying from 6 weeks to 14 months, while two patients lost eight and five pounds of the weight gained within the succeeding six months. The total gain in weight varied from 4½ to 31 lb., the added fat being as a rule distributed generally over the face, neck, breasts, abdomen, back, and buttocks. Blotner emphasises the tonic effect of the treatment and the improvement in the sense of well-being experienced by every patient. The red cell count showed an average increase of 400,000 after the administration of insulin, and the circulating blood volume an average increase of more than 10 per cent. during this period, the latter increase affecting plasma and corpuscles proportionately. This finding is regarded as evidence against the increase of weight being due to œdema; in addition, the relation between water intake and output was found to remain unchanged during and after insulin therapy in those cases examined, while in no case was there any diuresis after leaving off insulin. There seemed to be little danger of hypoglycæmia when the patients were provided with a liberal diet. It was striking that 6 of the 19 subjects showed local skin hypersensitiveness to insulin at the site of injection from one to six weeks after the beginning of treatment—a high incidence of the sign considering its comparative excelled that of their successors. The physician of to-day can still diagnose the presence of fluid in a pleural cavity, of pneumonia in a lung, or of phthisis when the disease is firmly established, as surely as could his predecessors. Like them, however, he cannot by himself distinguish with certainty between pulmonary excavation due to tuberculous caseation and cavitation of the lung due to other causes, nor can he diagnose a deep-seated tuberculous invasion of the lung tissue, whether cavitation be present or not, without the help of radiography. The touch and hearing of a blind man may indeed be more sensitive than those of a man with good eyesight, because he has learned to concentrate on the faculties he has retained, to compensate (so far as may be) for those he has lost. But if this be granted, the observations of a blind man, however sensitive his touch, still have not the value of those of a person who sees as well as feels. And if it be true that the older clinicians excelled those of a later generation in the arts of percussion and auscultation—a thesis difficult to prove—it is equally true that no amount of clinical receptiveness will enable one to detect physical signs of disease when those signs are non-existent. Radiography has proved that pulmonary tuberculosis is not detectable by physical examination unless the lesion has certain characters, and is situated near the surface of the lung. It is essential that this fact should be recognised, for if students are taught that incipient pulmonary tuberculosis can be detected by the method of light percussion and attentive auscultation, many lives will be lost which might otherwise have been saved.

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[1] Jour. Amer. Med. Assoc., Jan. 14th, p. 88.

There is here no divorce between clinical acumen and what are called scientific methods. The practitioner must learn to recognise the clinical danger signals before he can apply his scientific knowledge; no degree of skill in microscopy or radioscopy can compensate for ignorance at the bedside. But unfortunately, in the past, far too much stress has been laid on the importance of minute differences in percussion note or barely perceptible changes in respiratory murmurs. The student who, like MACAULAY, could recognise only two tunes, the National Anthem and the other, was discouraged at the outset of his career; the practitioner whose hearing had become blunted by the passage of time found a post-graduate course in modern methods of percussion equally depressing. But common sense is more valuable in the diagnosis of pulmonary tuberculosis than an artistic imagination. Far too little emphasis has been laid on the importance of such elementary observations as the patient's appearance, the history of a hæmoptysis especially in a young person, evidence of exposure to infection, the serious significance of lassitude at a period of life when physical energy should be abounding. Few students have been taught to realise the sinister implications of a furtive and evasive attitude on the part of a patient whose cough has driven him to the doctor, or the almost conclusive evidence afforded by the adolescent's indignant denial of hæmoptysis or any other symptom which he thinks may be interpreted as an indication of consumption. A lack of clinical observation rather than defective clinical examination is responsible for a failure to realise the need for sputum tests and X ray examinations until physical signs reveal the presence of disease so advanced that a cure can no longer be expected.

Much attention is devoted to-day to such surgical procedures as thoracoplasty, adhesion-cutting, and phrenic avulsion in the treatment of pulmonary tuberculosis. Our own columns this week testify to the place they take in the thoughts of those whose work brings them into daily contact with phthisical patients. The ingenuity displayed in the treatment of advanced tuberculosis is praiseworthy and the skill displayed by surgeons who have specialised in thoracic operations is admirable. But such desperate expedients as thoracoplasty would seldom be necessary if early diagnosis was the rule rather than the exception. Pulmonary tuberculosis in the stage of the "*rundherde*" or "*frühinfiltrat*" readily yields, as a rule, to rest, whether the patient is put to bed and kept there till resolution occurs or whether he is subjected to an artificial pneumothorax carried out before there has been time for adhesions to form. The appalling death-rate among young consumptives will continue to be a reproach to the medical profession until medical students and practitioners understand the importance of the danger signals of disease, the unreliability of physical signs, the necessity for repeated sputum tests, and the immense importance of X ray examinations in the diagnosis of early lesions.

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THE PHARMACOLOGICAL LABORATORIES

IN a preface to the seventh annual report of the pharmacological laboratories of the Pharmaceutical Society of Great Britain, Dr. J. H. Burn, the director, says that the publication of the new revision of the British Pharmacopœia may be held to mark the completion of the first period of the laboratories' activities. During the seven years which have passed a great deal of the research has been directed to pharmacopœial problems, and the examination of manufacturers' samples has provided experience which has been available to those responsible for the biological methods introduced into the Pharmacopœia. In the new Pharmacopœia there are no less than 27 monographs which deal with animal products or with substances requiring biological tests, while the biological methods in the appendix occupy nearly 40 pages. Since the Pharmacopœia is essentially a book for the use of the pharmacist, the figures indicate how far these new remedies have entered his sphere of work. Seven years ago the lack of familiarity on the part of the pharmacist with these substances would have made it difficult to introduce so many into the Pharmacopœia, and Dr. Burn believes that the establishment of the laboratories has played a part in changing this position. The laboratories have been the means of giving the pharmacist a growing acquaintance with biological methods and with the principles which underlie them. Gradually a closer connexion between pharmaceutical and medical science is being gained, which was impossible so long as the pharmaceutical outlook was directed to chemistry only, and not to biology also.

up an agreement and final Act intended to supplement the Geneva agreement, after reviewing the position and considering "what further measures can be taken to bring about the suppression of the use of opium for smoking ?" These new agreements set up Government monopolies in opium, provided for registration of smokers and rationing supplies, for opening a special opium account showing the revenue and expenditure, and for the treatment of addicts. The conference also concluded "that no radical measures for the suppression of the practice of opium-smoking are practicable while the production of opium continues on an enormous scale." This obvious conclusion lends force to the preparations which are on foot at Geneva for achieving the limitation of the production of the opium poppy and the coca leaf to the amounts required for medical and scientific purposes.

STAINLESS STEEL IN DENTISTRY

THE high price of gold has materially affected the dentist, who has always used this metal in the making of various appliances used in the mouth as well as for filling teeth. Hence much interest is being taken in the suitability of stainless steel for dental appliances, and it seems likely that in time this metal will largely replace precious metals in the construction of dentures. The first effort in this direction was made in Germany during the war.[1] The firm of Krupp experimented in the use of stainless steel with much success, and since then this metal has been widely used with excellent results. At first it was found difficult to strike up steel to the shape of the mouth, on account of its refractory nature as compared with gold. But Krupp's have a laboratory where models of mouths are sent with instructions from the dentist; the steel plate is struck up to the design marked out and tags are attached to it to which the vulcanite supporting the teeth adheres; and the dentist is then able to proceed with the remaining stages in the making of the denture. In this country progress in the use of steel has not lagged far behind, and a large number of steel dentures have been made and have proved highly satisfactory. The advantages of steel are its lightness, strength, and cheapness. It is not possible to cast the metal, as is often done with gold, so that the adaptation to the mouth is not as close. But in suitable cases the retention appears to be good. One of the difficulties hitherto has been the attachment of tags or bands to plates, since soldering is difficult and the joint not always secure. For this reason the use of steel for orthodontic appliances has only been tried tentatively; for in such appliances it is essential to be able to solder springs to move the misplaced teeth. But the introduction of spot-welding by electricity seems likely to overcome this serious defect. De Coster, of Brussels, has devised an apparatus capable of effecting this, and in this country F. I. and W. I. Robertson[2] have also evolved a satisfactory technique for the purpose, so that it may now be said that the last obstacle to the use of stainless steel for many purposes in dentistry has been overcome. For orthodontic purposes this material seems to be ideal. It is elastic, springy, non-tarnishable, and can be drawn out into wires of any gauge, while its cheapness is such that a supply sufficient to last the dentist his whole professional life can be bought for a few pounds. There is no doubt that gold must still be required for various purposes, but before many years stainless steel will probably have replaced precious metals for dentures and orthodontic appliances. This will be a definite advantage both to patient and dentist.

ANÆSTHETICS ABROAD

A PAPER in the January issue of the *British Journal of Anæsthesia* describes the prevalent methods of anæsthesia in France as demonstrated by the answers to a questionnaire circulated by the author, Dr. Flexer-Lawton, in coöperation with Dr. Desmarest, chief surgeon of the Ambroise-Paré Hospital, Paris. The most remarkable fact that emerges is the little progress that the employment of gas-and-oxygen appears to have made hitherto in that country. This is no doubt only a natural corollary to the comparatively backward state of France—as of other continental countries—as regards specialists in anæsthetics. There are scarcely any men in these countries comparable to the large body of practitioners in this country who hold the post of anæsthetist to a big hospital and devote all or almost all of their professional activity to giving aæsthetics and teaching others how to give them. Consequently any method which requires much practice or involves the use of complicated apparatus makes little appeal to those giving anæsthetics abroad, for they are for the most part men whose ultimate ambition is not to give anæsthetics at all but to act as surgeons. Another result of this state of affairs is the preponderance of local over general methods; for the local analgesic does and preferably should remain in the hands of the surgeon. Forty-two of those who answered the questionnaire expressed a preference for ether, 42 for Schleich's mixture (a combination of ether, chloroform, and ethyl chloride), and 11 for chloroform. Naturally most of those who answered made it plain that they did not use solely their favourite anæsthetic but exercised a certain amount of selection according to the requirements of individual patients. The use of avertin seems to have achieved a certain amount of popularity among French surgeons, but with this exception we find little mention of any of the "basal narcotics" in the article. Dr. Flexer-Lawton concludes with the pious wish that in a little while there will be in France both anæsthetic journals and anæsthetic schools.

THE TREATMENT OF SARCOMA OF BONE

THE treatment of sarcoma of bone offers a problem difficult of solution, for it is notorious that whatever measures are adopted the chances of cure are exceedingly small. Discussing the question with reference to sarcomata arising in the neighbourhood of the knee-joint, H. J. Laméris[1] has recently stated that of his own cases the proportion surviving for as much as two years after operation (amputation or disarticulation) is less than 25 per cent. The growth tends to spread longitudinally in the medullary cavity when once this is invaded; hence, local removal is apt to be followed by local recurrence. The great obstacle to cure is however the well-known tendency of bone sarcomata to undergo metastasis to the lungs. Disarticulation as an alternative to local removal is not an operation to be lightly undertaken when it is remembered that in most cases it is useless as a curative measure, since the lungs are already infected. With regard to treatment by means of X rays or radium, Laméris points out that, although sufficient time has not yet elapsed for a definite conclusion to be reached, the rarity in diabetics. Blotner regards the increase in weight as being due to improved absorption and assimilation, and to the increased intake of food (suggested by the study of the nitrogen excretion in the urine) brought about by the tonic action of the insulin, and possibly to some extent by the psychological effects of treatment.

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[1] See THE LANCET, 1928, i., 1292.

[2] Brit. Dent. Jour., Feb. 1st., p. 107.

[1] Laméris: Nederlandsch Tijdschrift voor Geneeskunde, 1932, lxxvi., 5818.

SIR JOHN ARTHUR THOMSON

Sir (John) Arthur Thomson, for 30 years professor of natural history in the University of Aberdeen, was probably the writer best known to the public as an interpreter of zoology from its bases to its multiple phenomena. He was a great teacher, and made a mark early in his career by his instructional courses on biology at the Edinburgh medical school, while his Gifford Lectures, delivered before the University of St. Andrews in 1915, proved him to be a profound thinker with a broad philosophic outlook. It is possible that the profuseness of his contributions to popular literature rather obscured than revealed his scientific qualifications; if this has been so an injustice has been done to the value of his work. His popular disquisitions over a great range of natural history were thoroughly grounded on learning and experience, and the ease of style and simplicity of doctrine were invaluable qualities for an appeal to public attention. The number of persons to whom the simple and even the elaborate phenomena, illustrating the story of life, have been made comprehensible by his voice and pen must be enormous, and the man who thus made straight the paths of science for adventurers into a difficult country was a public benefactor.

SIGHT TESTING AND DISPENSING

Is it or is it not to the interest of the whole community that the prescription of glasses for errors of refraction should be in the hands of qualified medical men and women? For many reasons we believe that it is. Opticians are divided into two sections: the majority who test the sight of all who desire it, and rely upon the sale of spectacles for their profit; and the minority who agree not to test the sight or prescribe glasses but to confine themselves to the dispensing of surgeons' prescriptions. The customers of the first section comprise the majority of the general public, including most of the insured persons entitled to ophthalmic benefit, and the profits of these opticians depend upon the number of customers they can attract and of glasses purchased. Appealing as they do direct to the public, advertisement in its various forms is one of the essentials of commercial success. Dispensing opticians, on the other hand, depend mainly on the recommendation of ophthalmic surgeons, whose prescriptions are quite useless unless they can rely on their being accurately dispensed in well-fitting frames. According to a latter recently circulated by the Association of Dispensing Opticians, the proportion of patients dealt with by the prescribing opticians to those bringing prescriptions from qualified surgeons is about six to one, and the tendency at present is for this preponderance to increase. The National Ophthalmic Treatment Board, which was set up through the coöperation of the dispensing opticians with the British Medical Association some three years ago, with the object of providing specialist aid for patients to whom an ordinary fee is prohibitive, has had a certain amount of success, and there is now a fairly wide choice of opticians, not only in central, but in greater London and in the provinces, who decline to do any eye-testing at all.[1] It is a regrettable fact, the letter states, that a large number of surgeons still send their patients to sight-testing opticians and not to the local dispensing optician to have their glasses made up. The more ambitious section of the sight-testing opticians, represented by their journal *The Optician*, have for years been endeavouring to qualify themselves, not only to deal with errors of refraction and muscle balance, but also to recognise such conditions as cataract and glaucoma. If they succeed in their endeavours to achieve State registration the distinction between ophthalmic surgeons or "oculists" and opticians, already found sufficiently hard to grasp by the large public, will inevitably become still harder. All ophthalmic surgeons who believe in the importance of keeping the treatment of visual defects of whatever kind in medical hands should take these facts to heart.

OPIUM-SMOKING IN THE FAR EAST

It is reported from Rangoon that the Burmese Government suffered their first defeat in the Legislative Council on Feb. 11th when the Minister for Forests moved that the draft agreements, adopted by the Opium Conference at Bangkok in November, 1931, should be ratified so far as it applied to Burma. The motion, which does not appear to have been debated, was defeated by 30 votes to 23. According to the commission of the League of Nations which visited the Far East there are more opium eaters than smokers in Burma. The smokers are chiefly Chinese. In Upper Burma all consumption of opium by Burmans is illegal, but in Lower Burma there are many registered and unregistered addicts. "In 1924 the Government decided to register all opium-smokers in order to give effect to the stipulations of the Hague Opium Convention which obliged Governments to take steps for the total suppression of opium-smoking, but carried no such obligation with regard to the eating of opium." It will be remembered that at the Hague Opium Convention of 1912 the contracting Powers pledged themselves to bring about the gradual and effective suppression of the manufacture of smoking (or prepared) opium, and to prohibit its import and export either immediately or as soon as possible. The Geneva conference of 1925 by a protocol relaxed these requirements, and postponed the suppression of smoking opium until not more than 15 years from a date when a commission should have decided that the illicit export of the drug from producing countries no longer constituted an obstacle to the reduction of opium-smoking in consuming countries. A commission which was set up in 1928 and reported in October, 1930, was instructed to inquire as to the situation in the Far East, the measures taken to carry out the agreements of 1912 and 1925, and the difficulties which the illicit traffic presented to the fulfilment of these obligations. That commission fixed no date from which the 15 years of grace were to run, but it arrived at the conclusion "that the limitation and control of poppy cultivation would alone assure the total suppression of opium-smoking." It also pointed out that in some Far Eastern territories opium provided a source of revenue for balancing their budgets, "sometimes as much as one-third of the total revenue being obtained from opium." In November, 1931, a conference held at Bangkok drew

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[1] A list of these can be obtained from the Society of Dispensing Opticians, 1, High-street, Marylebone, London, W.1.

SPECIAL ARTICLES

ESSENTIALS OF A NATIONAL MEDICAL SERVICE

ON Feb. 3rd Sir HENRY BRACKENBURY, chairman of the council of the British Medical Association, addressed a large meeting at Brighton on the Essentials of a National Medical Service. The chair was taken by Dr. J. O. SUMMERHAYES, and the meeting was arranged by the local division of the B.M.A.

Sir Henry laid down four conditions for any national medical service, namely :—

(1) The service must offer scope and opportunity for the achievement of the three-fold aim of modern medicine: curative, preventive, and constructive.

(2) Any service of the kind should afford opportunities for clinical and laboratory research.

(3) The service should be based upon the provision of a general practitioner for every individual, and the relationship between doctor and patient should be, as in private practice, primarily, if not solely, between those two, with no one else intervening, and should be a free relationship—free both in the sense that the doctor was not confined to some limited or prescribed system within which he must treat his patients, and in the sense that there was free choice both of patient by doctor, and, especially, of doctor by patient.

(4) The service must be a complete one, providing not only general practitioner service, but consultant and specialist services, various ancillary services, and necessary hospital accommodation.

He went on to say that the medical profession was in favour of providing this national medical service only for those who could not provide what they required for themselves. Its attitude in this matter was determined not by monetary considerations (for it was conceivable that an agreement might be negotiated on the widest basis which would be equally remunerative to the doctors), but it was because of their jealousy for the preservation of the fundamental conditions in the relationship of doctor and patient, which were completely preserved in private practice. As to the method of provision, the profession would favour an extension of the compulsory insurance system, partly because experience had shown that within that system it was possible to preserve the fundamental conditions of relationship just mentioned, and also because under that system a certain amount of experience had already been accumulated. He emphasised the desirability of unification in administration of the health services of the country, especially in bringing together the machinery responsible for public health and poor-law administration, and that responsible for the insurance medical service. In all these questions of administration the medical profession should be consulted, represented to some extent upon the authorities concerned, and trusted as completely as possible in matters of internal professional discipline.

Turning to institutional provision, he pointed out that hospitals were shifting away from the old voluntary basis to an increasing basis of self-support. It was very necessary, in view of this development, that the services of the medical and surgical staff should be recognised financially in some form or other, and a hospital staff fund was one of the features of the modern hospital conceived of as a piece of machinery within the national medical service. In conclusion, he referred to certain other ideas which the profession would like to see carried into effect. One of these was the employment as far as possible of the members of the local medical profession by local authorities in discharging their functions towards certain classes of individuals or in respect to certain diseases. Again, practitioners should be brought into closer relationship with, or be considered an integral part of, the public health service of the locality; the services should not be walled off from one another. The present period during which fresh enterprise was held up on the ground of economy constituted, he said, a breathing-space during which it was a very good thing to explore certain ideas and to endeavour to obtain harmony and agreement as far as possible, so that when a scheme was brought forward it might move to fruition with the widest possible consent.

THE TSETSE FLY

IN 1925 a Tsetse Fly Committee was set up as a sub-committee of the Committee of Civil Research (now absorbed into the Economic Advisory Council). This body was charged to prepare a practical scheme of British inquiry and action aimed at controlling the tsetse fly as a carrier of human and animal trypanosomiasis and at a preventive and curative treatment of that disease in man and animals. It has now issued its report.[1] A preliminary report published in 1925 recommended that research should be centralised under a trypanosomiasis committee and assisted by parliamentary and local government grants and by subscriptions. This proposal did not, however, meet with the approval of the officers administering the various territories, and since 1927 the Tsetse Fly Committee has itself acted as an advisory committee on human and animal trypanosomiasis.

It is now established that nagana (trypanosomiasis of animals) is caused by any of three trypanosomes: *T. brucei*, *T. congolense*, and *T. vivax*. Often all three are found together in one animal, but *T. brucei* is the important agent in horses and dogs, and *T. congolense* and *T. vivax* in cattle, the former being the more virulent. The course of the disease varies very greatly, according to the infective agent, to the host, to the conditions, such as rain, food, work, and intercurrent disease. Different strains vary widely in virulence. Besides the recognised acute, subacute, and chronic forms of infection there is a latent or dormant form, characterised by an absence of anæmia and other signs of ill-health. It is common in all the East African territories; in Northern Nigeria 20–30 per cent. of cattle show it. Host and parasite have attained an equilibrium which may last throughout life, but is easily upset by a change in conditions of food and work and by exposure to such a disease as rinderpest. This "premunity" may be to local strains of trypanosome only, and it is more easily acquired by the young than by the adult. At present, authorities do not know whether the "immune" herds are really immune or whether their resistance is only to local strains or is a "premunity." Some preliminary cross-breeding work has suggested that resistance is transmissible.

DIAGNOSIS AND TREATMENT IN ANIMALS AND MAN

Recent work has shown more and more the difficulties of diagnosis. Inoculation of Halarsine and Antimosan causes an increase in the number of circulating parasites, and may prove useful. Complement fixation and the adhesion phenomenon are results so far reported are not encouraging. While locally the initial effect of treatment is often marked, growth usually recommences after a short time despite continued applications, while the problem of pulmonary metastases has also to be faced.

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[1] Economic Advisory Council. Tsetse Fly Committee Report. London: H.M. Stationery Office. 1933. Pp. 27. 6*d*.

Laméris holds that early and radical operation is the best procedure, since on rare occasions a cure has resulted. It may be argued, also, that even if cure is not to be expected the patient's condition, both physical and mental, may be so much improved by removal of the primary growth as to justify operation. The psychological effect of a non-possumus attitude on the surgeon's part may be profoundly depressing; and by the mere fact that something has been done for him the patient's life may be rendered much more tolerable, even if it is not lengthened. It does not, however, follow that so mutilating an operation as disarticulation is the best measure. Many surgeons advocate less radical procedures, such as free local removal followed by grafting, on the ground that if metastasis has not already occurred this will be sufficient, while if it has occurred no operation is of any avail. The decisive factor in prognosis is the stage, early or late, at which the patient comes under treatment.

PSEUDOMENSTRUATION

THE histological alterations in the uterus and ovaries during the sexual cycle were first worked out on the human female, and largely through the work of R. Schröder it became evident that ovulation was limited to the intermenstrual phase. As a result, gynæcologists accepted the view that menstrual bleeding was always preceded by ovulation. Later, however, G. W. Corner and others found that in monkeys (*Macacus rhesus*) cyclical bleeding often occurs in the absence of ovulation; and C. Mazer and A. J. Zizerman[1] now claim that they have demonstrated anovular bleeding in women. In macaques such "pseudomenstruation" consists of disintegration of what is called the "interval" type of endometrium; according to the views quoted in our leading article of Jan. 21st (p. 146) this "interval" endometrium has hypertrophied under the influence of œstrin but has never undergone a pregestational stage under the influence of a corpus luteum. Mazer and Zizerman base their belief in human pseudomenstruation on three pieces of evidence. In the first place, it has sometimes happened that at abdominal operations on regularly menstruating women who were at the end of the menstrual cycle no corpus luteum was seen in the ovaries. Secondly, they have found that in these cases the female sex hormones were absent from the circulating blood before menstruation. Thirdly, they state that in a series of 41 cases of functional sterility, scrapings from the uterus of 12 patients had the structure of an interval endometrium without premenstrual—or rather pregestational—hypertrophy, although they were taken shortly before menstruation was due. They imply that in cases of this kind the sterility can be explained by assuming absence of ovulation and replacement of normal menstruation by anovular cyclical bleeding. In this country, at least, little reliance is placed upon the demonstration of a corpus luteum in the ovaries by inspection alone; it is a well-known experience that often a corpus luteum can only be demonstrated by incising the ovaries. Again, there is not the same confidence about the female sex hormone test as there seems to be in America. The third piece of evidence they bring forward, however, is much more important, and further work is immediately required to corroborate these histological findings. They are in direct opposition to those of Schröder in Germany and of Wilfred Shaw in this country.

LORD SYDENHAM

THE public career of the late Lord Sydenham is so well known that no comment upon it can be required for the information of our readers. A great scientific soldier and military administrator he sat on Lord Esher's Committee on War Office Reconstruction and later proved himself an admirable governor of Bombay. But he had a direct and important connexion with the medical profession through his acceptance of the position of chairman of the Royal Commission on Venereal Disease appointed in 1913 by Mr. Asquith. Here his comprehension of the difficult medical and social problems that had to be dealt with proved of eminent service, and as a result he became chairman of the National Council for Combating Venereal Diseases (as the British Social Hygiene Council was first entitled). Here he found the work hard and sometimes distasteful, but he proved himself an excellent chief.

RESEARCH SCHOLARSHIPS IN HÆMATOLOGY

THE Lady Tata Memorial Trust was founded in April of last year by the late Sir Dorabji Tata, of Bombay, in order to promote the advancement of medicine by research into the diseases of the blood, with special reference to the leukæmias. Research scholarships and fellowships, and grants in aid of research work, are to be given in part to Indians and institutions in India, and in part to workers in other countries. Two scholarships, each of the value of £400, will be open for award in June, 1933, to men or women in the British Commonwealth, exclusive of India, for research work on blood diseases, with special reference to leukæmias. Each will be tenable for a year, from Oct. 1st, and renewable up to a normal maximum tenure of three years. The scholarships will ordinarily be awarded on a whole-time basis, but a candidate holding a part-time teaching post may be allowed to retain this if this will not prevent him from giving his chief interest and energies to the research. Applications in proper form must reach the secretary, Dr. H. S. Patel, Lady Tata Memorial Trust, Capel House, 62, New Broad-street, London, E.C.2, before April 15th.

TRAINING IN MENTAL HEALTH FOR SOCIAL WORKERS

IN our advertisement columns last week appeared an invitation from the London School of Economics and Political Science to social workers to apply for admission to a one-year course of theoretical and practical training in mental health. Substantial scholarships are available to successful candidates, and the obtaining of a certificate to knowledge of the principles of social science makes a sound introduction to a career that is useful alike to those who follow it and to the public. The training in mental science will be directed towards the qualification of social workers to help in clinics for the treatment of adult mental patients, and for child guidance; indeed, where mental behaviour constitutes the difficulty, the social worker, with the equipment to be obtained at the school, should be prepared to cope with it. Applications for scholarships should be made before May 1st to the secretary of the London School of Economics (Houghton-street, Aldwych, London, W.C.2) who will furnish further information.

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[1] Amer. Jour. Surg., 1932, n.s. xviii., 332.

counsel for the plaintiff, sounds substantial until the other side can be heard. The medical profession must not be over-confident of the safeguard which the Act provided; it is a preliminary obstacle which a plaintiff may manage to surmount. Juries, as the author of the catechism truly says, are reluctant to find anyone insane. Mental patients seem to find it easy to produce abundant evidence to prove themselves to have been at all times of sound mind. One might add that the certifying doctor can be certain that members of his own profession will go into the witness-box to attack with their *ex post facto* criticisms the opinion he formed when examining the patient long ago.

A Lunatic Wandering at Large

Although juries dislike finding verdicts of insanity, they feel (like the rest of the general public) a horror of the dangers of the escaped lunatic. Such dangers, when they occur, deserve publicity; they help to remind the ordinary citizen of the protection which the certifying doctor supplies. On Feb. 4th at Willesden police-court a story was told of a mental patient, found at large, who was brandishing a knife and threatening murder to his wife. The man, it seems, had been certified insane and had been sent to the county mental hospital, being released therefrom on his father's promise to send him to a private institution. From the latter he had been allowed out on parole to live with his father at Mitcham. When he visited his wife and children at Willesden and put them in fear, a warrant was obtained for his arrest. But on the following day the warrant officer had to apply for the withdrawal of the warrant, which had been issued on a misunderstanding of the law. An insane person cannot commit the offence of murder or attempted murder or any other offence. The warrant officer explained to the court that the case was one for the Lunacy Commissioners. Police officers in the district, although they had no power to arrest him, had been warned that the patient was a dangerous lunatic who, if seen, should be detained pending the decision of the authorities. Section 15 of the Lunacy Act directs constables and relieving officers who have knowledge that any person (whether rate-aided or not) wandering at large in their district is deemed to be a lunatic to apprehend him forthwith and take him before a justice who must then call in a medical practitioner and, after examination and inquiry, make any necessary order for the patient's detention in an institution for mental patients. The wife's solicitor protested against his client's being left unprotected against a possibly murderous assault. He asked that at any rate the warrant should not be withdrawn until he had an opportunity to go to the High Court for a mandamus. The magistrate allowed the warrant to remain from the Saturday morning to the following Monday, and the situation has presumably been met by re-establishing control and supervision over the patient.

THE MANCHESTER HOSPITALS.—Manchester Royal Infirmary last year admitted 11,465 in-patients, and treated 48,998 out-patients, of whom over 29,000 were accident cases. The year closed with a deficit of £8423; legacies were £11,000 less. The proposed new wing containing 100 pay-beds is estimated to cost £90,000.—Last year there were 2585 in-patients at Manchester Royal Eye Hospital, and 10 more beds have been added, making a total of 160. There were 28,422 out-patients, an increase of 920, and 137 paying patients.—Several of the Manchester institutions are being fitted with talking-film apparatus, notably the epileptic colony at Langho, and the tuberculosis sanatorium at Baguley. The Crossley sanatorium, on the borders of Delamere forest, which is attached to the Manchester Consumption Hospital, has already had a first performance.

BUCHAREST

(FROM OUR OWN CORRESPONDENT)

PROPRIETARY REMEDIES *v.* DOCTORS

OWING to the economic depression the Rumanian medical profession outside the capital, Bucharest, is suffering from unheard-of idleness. Three-quarters of the population are unable to pay for the doctor's services and therefore do not ask for them; the remaining quarter, because money is very scarce, under the influence of mass psychology are trying to save all unnecessary expenses, including of course the payment of a physician. Medical help is sought only when there is great danger or when the patient is already on his death-bed. This unhappy state of affairs is being exploited by manufacturers of proprietary medicines, some of whom are advertising their wares widely, shrewdly enumerating a whole series of indications which will wheedle the last pennies out of the people. Even in the smallest village, in the most unimportant journals, the Laboratoires —— are proclaiming that their products cure arterio-sclerosis, Bright's disease, and almost everything else. This same firm advertises a sandalwood preparation which is supposed to cure gonorrhœa in all its stages, cystitis, prostatitis, and "hypertrophy of the prostate." To such bombastic advertisements even the educated classes fall victim, and thus perhaps delay the proper medical treatment until too late. The Medical Chamber, recognising the damage that such proprietary medicines are doing to the careworn medical profession, is proposing to the Ministry of Internal Affairs that advertisements of such remedies in the newspapers should be censored by a special board appointed by the Ministry of Public Health, under penalties which might be contributed to the fund for the widows and orphans of physicians. The memorandum will argue that it is the duty of the State to protect its subjects from obvious frauds. If a jeweller sells a brass ring and passes it for a gold ring, he is liable to severe punishment. In the same way if a credulous man buys a medicine which is stated to cure hypertrophy of the prostate and it does not, he is cheated and the beguiler deserves just as much punishment as the fraudulent jeweller. The medical profession awaits the decision of the Ministry with great curiosity.

VENEREAL DISEASES IN THE ARMY

A census of venereal patients, be it made with ever so much care, is always incomplete, partly because of the great number of irregular practitioners or quacks who compete with medical men in treating venereal diseases. Owing also to the long duration of these infections, those affected often lose patience and go from one medical man to another, with the result that the same patient appears in the records several times. In the military statistics, however, all these difficulties of the enumeration are avoided and trustworthy data are obtained. According to these, the prevalence of venereal diseases per 1000 men in the army was 69·8 in 1929 and 67·4 in 1930. The amount of syphilis is held to be decreasing, because in 1930 and since that year the soldiers have been examined once a week by venereal specialists, and if anything is found they are sent to special hospitals where they are kept until radically cured. Those suffering from syphilis are recalled every three months for a course of treatment through the first year, and afterwards, for two years, they undergo a blood test every six months.

very reliable for some forms, and could probably be adapted for all, but require the facilities of a laboratory. The formol-gel test is four times as accurate as microscopic examination for the *T. soudanense* infection of camels, in which the mercuric chloride test is also very delicate and accurate, though it is unreliable in other animals. The success with the camel encourages the hope that equally reliable methods may be found in other animals, but at present reliance has usually to be placed on microscopic examination of blood films and gland smears.

Many drugs have been tried without success. Tryparsamide has little curative value but will protect against *T. vivax* long enough for cattle to be driven safely through a fly belt. The efficacy of Naganol depends on the strain; it is effective against *T. brucei* and *T. soudanense*. Antimony tartrates are useful for *T. congolense* and *T. vivax*, but most of the animals so treated are "premunised" rather than cured; these drugs are cheap, but are not without dangers such as parenchymatous hepatitis. Antimosan seems to have the properties of the tartrates without their drawbacks, but it is more expensive.

Other than drugs and fly eradication, the methods of control of animal trypanosomiasis are: breeding immune herds, isolating infected animals quickly, dipping, chemical prophylaxis, immunisation, and the prevention of rinderpest. Losses in a herd can be kept very low if the disease is diagnosed early and the victims removed at once. Repeated arsenical dipping retards the development of the infection, but dipping is of little prophylactic value. Trypanocidal agents can protect animals for a very short period, but the method has not otherwise offered much promise. Nor have attempts at immunisation yielded satisfactory results up to date, but it seems probable that animals could be "premunised" against the two or three species of trypanosome with which they are likely to come in contact. It has been urged, however, that the existence of large "premunised" herds would favour the multiplication of flies and provide a reservoir of infection.

IN THE TREATMENT OF HUMAN TRYPANOSOMIASIS

The two drugs chiefly studied since 1925 are Germanin (Bayer 205) and Tryparsamide. The former is curative in the early stages of *T. gambiense* infection, but less certain with *T. rhodesiense*. The present tendency is to give germanin first and a course of tryparsamide later, but tryparsamide is the drug of choice if the central nervous system is implicated; it can be given intravenously, intramuscularly, or subcutaneously. So satisfactory are the results that Congo natives have now as much confidence in the treatment of sleeping sickness as in that of yaws. Germanin has an additional prophylactic value; it seems definitely to prevent the development of an infection. One authority recommends a quarterly dose of a gramme.

Since animals may form a reservoir of infection for *T. rhodesiense*, an important preventive measure in Tanganyika is bringing the natives out of fly-infested forests and establishing them in large clearings.

CONTROL OF THE FLY

Over large stretches of Africa no economic progress will be possible until the tsetse-fly problem has been solved. In extreme cases at present it may be necessary to evacuate the population and leave the fly in possession. The cost of extensive bush clearance is prohibitive, and reclamation by settlement has a limited application, as the bush rapidly springs up again if the clearings are not cultivated. A cheap and effective way of poisoning trees has been discovered, but some varieties are not susceptible to it. More and more ways of killing trees are being evolved, and properly organised grass fires will eradicate the fly for several years. Tsetse areas are sometimes divided into manageable blocks by strip clearings, and in Tanganyika experiments are being made with game barriers. Some tsetses cannot live in dense thicket, and fly barriers can be made by planting broad strips of thicket; this is a very promising development. Satisfactory progress has also been made in catching the flies with hand nets and traps.

There is no royal road to the elimination of the tsetse fly; the measures required differ according to the kind of fly, the nature of the country, and the habits of the natives. Most valuable pioneer work has been done in Tanganyika, where 70 square miles of tsetse-infected bush have been cleared and reoccupied. Throughout another 80 square miles flies have been eradicated or greatly reduced by grass fires, and a corridor clearing has given access to a fine stretch of 150 square miles of grazing. The committee looks forward confidently to the time when it will be possible in suitable areas to eradicate the tsetse at a relatively small cost. The work, however, needs a special staff of trained men. Research for improved methods is a problem of great urgency and practical importance, and the committee hopes that every effort will be made to provide the necessary funds for this work, the successful conclusion of which is vital to all the fly-infested territories of Africa.

MEDICINE AND THE LAW

Hints for Lunacy Certification

FOR doctors who are called upon to perform the duties and incur the risks of lunacy certification a catechism has been compiled and published by one who has experience of the pitfalls of this class of work.[1] The startling amount of damages awarded in the Harnett *v.* Bond litigation is a reminder that the risks are serious. A practitioner who wishes to be on the safe side of the law might do much worse than study the 17 questions which make up the catechism. They are too long to learn by heart but a duplicate set of them is conveniently printed on pages intended to be detached and carried in the pocket for quick reference. If, after studying them, the practitioner can feel that his certificate meets all their requirements, he need fear no verdict in the years to come. Here, for a sample, are questions 7 and 8 in the series. "Have I certified this patient on hearsay evidence or (as I should) only on what I observe myself? Have I made every endeavour to prove that the facts communicated by others are facts?" Doctors who approach the unwelcome task of certification without the confidence of experience will find it worth while to take trouble. It is a mistake to suppose that the Mental Treatment Act of 1930 gave them immunity. The protection given by the Act was a matter of procedure rather than of principle. In cases of the Harnett *v.* Bond type the plaintiff has to prove either bad faith or want of reasonable care. He cannot now proceed with his claim unless the High Court is satisfied that there is "substantial ground" for his allegation of bad faith or want of reasonable care. But any sort of claim, if stated *ex parte* by eloquent since, as a general rule, there is more variation in this department than in the wards. Having seen all the new patients, I see a few of the old patients—those who have to be followed up as of special interest. A visit will be paid to the out-patient theatre to supervise the injection of varicose veins and the performance of other minor operations by the students when there should still be time for a grateful cup of tea at 4.30 P.M., when a lecture has to be delivered on some surgical condition. My chief assistant will have arranged for the cases to be demonstrated and have had a series of pathological specimens illustrating the condition set out on the bench. At the end of the lecture a short cinematograph film illustrating the method of operating on this particular surgical condition is shown, and there can be no doubt that teaching through the cinematograph has come to stay.

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[1] Safeguards in Compiling a Certificate for the Insane. By Horace B. Hill, M.R.C.P. London: Arthur H. Stockwell, Ltd. Pp. 31. 2*s.* 6*d.*

On the two afternoons devoted to operations the list keeps me busy till 6.30 P.M., or even later. If possible, nursing-home patients are visited before dinner, unless consultations on the way home have been arranged at the last moment. This situation is a good example of the strain of the surgeon's life, already alluded to. The dilemmas cannot be escaped from, but have to be met in accordance with circumstances, as dictated by the respective seriousness of the simultaneous calls upon time. As a rule the public is reasonable; where it is not one must put the best face possible on the situation. Dinner should be the most important meal of the day, taken at leisure, but often an emergency call to a distance, an extra case on the list at the hospital, or a consultation arranged at a late hour to suit the convenience of a patient or a practitioner may interfere with the time-table.

THE EVENING

Medical societies exist in profusion in London; they still continue to multiply, and the doctor is often lured into speaking at an evening meeting when he would certainly advise other people to stay at home and take it easy. But if he has been booked to join in a discussion he must go, and from such interchange of experiences he gains valuable breadth of view. Or he may have to attend a medical board meeting in the evening, held at his own house or that of a colleague; while he may have an examining appointment, compelling him to mark papers for a weary period; and just as he has got settled down the telephone rings, and the car has to be requisitioned in order that he may perform an emergency operation in a cottage hospital to which he is attached. It is true that on journeys such as these he may find an opportunity for thinking about the plans for the morrow, but sometimes the concentration needed cannot be found. On arrival, the patient is seen, and if a diagnosis is made, showing that operation is needed, the patient is given an anæsthetic, the area is prepared and the operation is performed with the coöperation of the local practitioner. The time taken over this operation may be short or considerable, and trouble over the administration of the anæsthetic may complicate matters—one has to be prepared for many things—but sooner or later the operation is completed and, considering everything, the patient is returned to bed in quite a good condition. Where such emergencies occur during the period of examinations, the task of completing the marking of the papers has to be undertaken in the small hours of the morning, as the marks are required for the viva voce examination which takes place in the afternoon of the following day. Of course, I am not here describing an average evening, but am indicating what may occur and have to be provided for. When the emergency operation coincides with the immediate necessity of marking examination papers the position is a particularly trying one.

And there are other things besides urgent professional calls which may bring home to the hospital surgeon that his evening time is not his own to dispose of, though he has many uses to which he wishes to put it. I have indicated, in speaking of the general work associated with his job, the part to be played by the hospital surgeon in the administration of the hospital and the school. These activities bring with them evening work. Articles for medical papers, the hospital reports, and the medical journal of the school may have to be prepared, the reports of sub-committees may have to be drafted or scrutinised, lectures have to be put into shape, calling for the reading of the literature, at any rate, of one's own subject. And a book may be on the stocks. I say nothing of social engagements in the evening outside those of a professional character. Here every one is a law to himself or herself, as far as independence permits, but I have heard what "all work and no play" make of Jack.

The hospital surgeon's life is not a restful one; it is sometimes a hard one, and its material reward is capricious. He never knows what his next case is likely to be, but as new things turn up they provide recurring stimuli. The dilemmas of practice may sorely try him—this is a matter of temperament—but the triumph over them yields compensating satisfaction. He whom the life suits would not exchange it for any other.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdr. F. G. H. R. Black is placed on the retd. list.

Surg. Lt.-Comdr. J. H. B. Crosbie to be Surg. Comdr.

The following appointments are notified: Surg. Comdrs. C. G. Sprague to *Vindictive;* A. G. McKee to *Curacoa;* and A. E. P. Cheesman to *Malabar*, for Bermuda Dockyard.

ROYAL ARMY MEDICAL CORPS

M. S. W. Bisdee and J. Walsh to be Lts. (on prob.).

Lt. (on prob.) M. S. W. Bisdee is secd., under the provisions of Art. 213, Royal Warrant, for Pay and Promotion, 1931.

Lt. (on prob.) G. A. Kane resigns his commn.

ARMY DENTAL CORPS

H. C. Dobbie to be Lt. (on prob.).

INDIAN MEDICAL SERVICE

Lt.-Col. H. E. Stanger-Leathes is apptd. Hon. Surg. to The King, and promoted Bt. Col., vice Maj.-Gen. C. Hudson (retd.).

Col. W. R. J. Scroggie retires.

COLONIAL MEDICAL SERVICE

Dr. K. C. Mackenzie has been appointed Medical Officer at the Gold Coast; Dr. J. R. Forde has been promoted to Senior Medical Officer at the Gold Coast: and Dr. J. F. C. Haslam becomes Chief Medical Officer, Barbados.

DEATHS IN THE SERVICES

The death is announced from Melbourne of Major-General Sir George Cuscaden at the age of 76. Sir George, who during the war was Director-General of the Australian Medical Service, had previously seen service in the Egyptian War of 1882.

MONMOUTHSHIRE ISOLATION HOSPITALS.—Dr. D. Rocyn-Jones, the county medical officer, reporting upon isolation hospital facilities in Monmouthshire, states that "there is not in existence at present a single hospital in the administrative county which can be regarded from all standpoints as satisfying the requirements of the Ministry of Health in the matter of adequate facilities and arrangements for the isolation of the infectious sick." He adds: "It can be definitely stated that the facilities for the isolation of the infectious sick in the administrative county have never been adequate, and perhaps it would be truer to say that they have been woefully lacking, and this lack of provision in many instances has been responsible, in a large measure, for the fatalities resulting from infectious disease." There are 189 beds and 8 cots, whereas on the recognised ratio of beds to population there should be not less than 345. It would therefore be necessary to make provision for 200 additional beds, but probably the population ratio need not be strictly adhered to if some system of pooling could be adopted, in which case it should be sufficient to provide for 120 extra beds. The provision for small-pox patients is satisfactory.

THE DOCTOR'S DAY

"Come, tell me how you live," I cried,
"And what it is you do!"

XV.—THE HOSPITAL SURGEON

THE life of a hospital surgeon is so varied that in many respects no two days are alike. He pursues a certain routine, which is liable to be sadly upset by emergency calls when these take him out of his town, and other engagements have to be fitted in where best they can be. The contrast of the surgeon's day with that of the established consulting physician is striking in one respect, the surgeon is called upon to do much more work at the teaching hospital, while many fewer medical emergencies occur in hospital practice. A ward round is made by few hospital physicians daily, and seldom occupies more than two hours in ordinary circumstances, but it is quite ordinary for the operation list of the surgeon to involve five or six hours' work. In collaboration with pathological and research departments the physician's time is more fully taken up, but when procedure is dictated by special findings the surgeon may have before him lengthy work still to do, and work that has to be done by a special time. And it is this that puts upon the surgeon the real strain—his time scheme at the hospital and elsewhere is ever at the mercy of emergencies.

Nowadays it is the custom at many hospitals for all members of the staff to do their share of work in the out-patient departments, and an excellent plan it is. The days are past when the assistant surgeon saw out-patients only and did emergency operations, while the work of the full surgeon was confined to in-patients and to operations performed on certain set days. The developments of general and special surgery, first gradually and then rapidly, rendered such an arrangement obsolete. The teaching hospital may now demand four half-days a week from the surgeon; one half-day is spent seeing out-patients, another in a ward round, while the other two are allocated to operations.

During the university term certain lectures and demonstrations have to be given in the medical school. There are also numerous student societies, each of which requires a president every year from among the honorary staff. There are also clubs and societies in connexion with the nurses, the massage students, the X ray students, hospital almoners, and many others, all of which at one time or another welcome—may I say are insistent upon?—the attendance of a member of the honorary staff at their different functions. A large number of subcommittees of the governing body of the hospital consist chiefly of lay members, but these rely in great measure on the judgment of members drawn from the medical and surgical staff. Remembering how much trouble has arisen in the past because members of the governing body have not taken the feeling of their medical colleagues on some essential point before coming to a decision, the surgeon, however busy, feels it his duty to attend the committees of which he is a member, with such regularity as he can make possible.

The following is a picture of a typical day in the life of a surgeon to a London hospital and school, and is written from that aspect; but while any centre of medical training will have its particular features, dependent upon size, locality, and tradition, the surgeon's life will follow much such a pattern.

THE MORNING

Breakfast at 8, a glance at the morning paper and a hurried review of letters, most of which will be duly sorted by the secretary when she arrives an hour later. At 8.30 the car is ready to take me to a nursing home where I see one or perhaps more patients. Perhaps a dressing has to be done, or some stitches taken out; and then a patient at another nursing home, possibly two or three miles away, has to be visited. At 9.30 an operation has to be performed at still another nursing home. Why is such an itinerary necessary? Cannot all the patients be housed in the same nursing home? It would be all to the good of the surgeon if they were, but to-day patients take a pride in choosing their own nursing home. One says: "I want to go into such and such a home because Mrs. X went there and was comfortable and well-looked after"; others have reasons of locality, amenities, and so on to support their private preferences. The question of fees is an important one to-day, although it was often not discussed in advance in the golden pre-war time. The average patient now wants an estimate of the whole extent of his probable expenses before he decides what home he will patronise, and the male patient now is as prudent as the female.

Since the war many hospitals have instituted private wards and I think that these have come to stay. In such wards middle-class patients can be treated for very modified fees, the alternatives being cheap nursing homes or the ordinary public wards. If the private wards in the London hospitals have the effect of causing inefficient nursing homes to close down it is all to the good, since abdominal operations performed in small rooms with poor lighting and equipment cannot be for the benefit of the patient, nor, in such circumstances, can the surgeon do his best work. Operations, except minor ones, should not be performed in nursing homes unprovided with an operating theatre or a lift; it is unfair to the patient, to the surgeon, and to the nurses. However, I must not digress, during a picture of a working day, into a discussion of the difficult situation of the middle-class surgical or gynæcological patient.

The operation, the impending performance of which has been mentioned, begins at 9.45. It may be a radical amputation of the breast for cancer and the operation takes just under the hour, the surgeon being assisted perhaps by his house surgeon who has come from the hospital especially to help. After the operation the relatives of the patient are interviewed and a prognosis is given; the surgeon motors back to his house to see patients. In the intervals letters are dictated to doctors and sometimes to patients. And then come consultations. It is true that some surgical cases do not take up much of the consultant's time, as for instance a hernia. On the other hand, a nervous patient with a thyrotoxicosis may demand nearly an hour's careful study before a decision as to the proper line of treatment can be given. Often arrangements have to be made for the patient to go into a nursing home for further investigation and for a consultation with a physician. Perhaps the practitioner's diagnosis of "chronic appendix" is one which requires to be sifted most cautiously, in order that such conditions as salpingitis, cholecystitis, gastric or duodenal ulcer can be eliminated. It is not possible to calculate the time that will be required for consultations, or what may constitute an average morning, but as a rule half an hour must be allowed for each patient. It is aimed that the last patient should depart by 1.15 P.M., when a light luncheon is followed by the dictation of a few more letters, arising perhaps out of the consultations.

THE AFTERNOON

At 1.30 I am again in my car en route for hospital. On out-patient days patients who have been especially sent up to be seen by their own doctors are taken first. The students who have written clinical notes on these cases read them out and are asked questions about the patients. Diagnosis and the differential diagnosis are discussed and the line of treatment that should be adopted. If the case is an injury to a bone or to a joint it is removed to the X ray department, a skiagram is taken, when a report will be forthcoming in about half an hour. The surgeon who likes teaching gets ample opportunity in the out-patient department, which is normal in size," in such a case the amount f enlargement must be very small and not capable of assessment from the weight of tissue extirpated. Further, to quote from Mr. Joll's excellent book,

> "The size and weight of the gland under apparently normal conditions are known to vary somewhat widely n different countries, at different ages, under varying onditions of diet, and in different physiological phases such as puberty, adolescence, pregnancy, and so forth."

And finally, pre-operative administration of iodine may alter the weight of the gland.

With regard to the histology of the tissue removed; of my six cases submitted to operation four showed a hyperplasia-involution process, areas of hyperactive tissue being interspersed with areas of involution. In one a densely calcified nodule was present in a gland which showed definite areas of hyperactivity. In the remaining two many involution areas were present but no tissue was definitely hyperplastic. This appearance can be accounted for by the fact that all the patients received iodine treatment prior to operation.

I am, Sir, yours faithfully,
JOHN R. H. TOWERS.

St. Mary's Hospital, W., Feb. 13th, 1933.

THE INDUSTRIAL DOCTOR

To the Editor of THE LANCET

SIR,—As medical officer in charge of a clinic serving the interests of a firm with numerous employees, I also was interested in the day of "An Industrial Doctor," and share Dr. Castellain's regret that the author made no reference to the question of coöperation with medical practitioners and hospitals.

The industrial doctor in a large concern has facilities for diagnosis and treatment, such as X ray apparatus, skilled massage and remedial physio-therapeutic aids, not possessed by private practitioners; he also has behind him his firm's resources to assist its employees in obtaining specialists' opinions, convalescence, and various forms of special treatment. By treating at the factory clinic cases of illness that do not involve absence from work he prevents to a large extent the development of more serious disease, and saves his firm, the patient, and the panel doctor much trouble and loss of time. By coöperation with the private practitioner during an employee's sick absence the industrial doctor is able to assist and expedite recovery and when necessary arrange for light work during the final stage of convalescence. Where, as is the case with my firm, panel benefits are made up to full pay during sick absence, subject to length of service and the factory doctor's satisfactory report, such coöperation is, of course, essential in the patient's interest. Ambulatory accident cases, coming under the provisions of the Employers' Liability and Workmen's Compensation Acts, as well as the various dermatoses, are best treated at the factory clinic, as they can be kept under close medical supervision and seen daily, instead of only once a week as is more usually the case at hospitals or panel surgeries. The value of keeping the injured workman in close contact with his place of employment, and stimulating his desire to resume work by suitable remedial measures will be obvious to all who have studied the problems of industrial psychology.

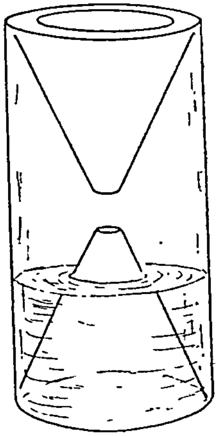
In practice it is found that fully 99 per cent. of insurance practitioners not only coöperate with, but also welcome the work of the industrial doctor, and appreciate his aid in caring for the health and welfare of the industrial population. There are many other aspects of this work not touched upon by your contributor, doubtless owing to limitations of space, but I am sure he feels, as I do, that few other branches of practice offer such opportunities of useful and interesting clinical work.

I am, Sir, yours faithfully,
London, W., Feb. 10th. N. HOWARD MUMMERY.

CHLOROFORM IN CHILDBIRTH

To the Editor of THE LANCET

SIR,—At the present moment many attempts are being made to find a safe method for the administration of anæsthetics during labour by the patient herself, for employment in cases attended by midwives. Chloroform capsules have been extensively tried by many hospitals, and, excellent as they appear to be, I venture to suggest that the inhaler here described, which I have had constructed, offers a simpler and safer method for the use of chloroform. By reference to the drawing it will be seen that the inhaler, which can be made of either glass or metal, embodies the same principle as the unspillable inkwell. When it is charged with chloroform, it is impossible for the liquid to be spilled, and yet a free air passage through the instrument and over the surface of the chloroform is permitted. In this way only air and chloroform vapour are breathed. The air does not pass through the chloroform but merely over its surface.



The chloroform can be administered by the patient if she simply holds the inhaler to her nostrils; another method—but probably not suitable for use by midwives—is to insert the inhaler into the narrow end of a rubber funnel, the broad end of which is applied to the face. The broad end should be convoluted to allow sufficient airway, or the funnel itself can be made of wire and merely surrounded by a portion of lint. So long as the patient administers the anæsthetic herself, I believe that there can be no danger, as no great concentration of chloroform can be obtained, and should unconsciousness supervene the administration of the anæsthetic will cease as the patient's hand falls away from the face. If the inhaler is made of metal it will not break if dropped.

Such instruments have the following advantages:—

(1) No sudden concentration of chloroform can be administered.

(2) There is no necessity for the patient to break anything so that, even when semi-conscious, she is still in a position to administer the anæsthetic.

(3) They are cheap to make and can be sold completely sealed.

(4) They are simple to operate. To put the instruments into use it is only necessary for the nurse to puncture both ends of the inhaler with a sharp-pointed instrument, as, for example, scissors; or as an alternative, screw plugs can be inserted in the ends.

(5) When exhausted they can be returned to the chemist who, for a small charge, would replace the exhausted inhaler with a new one fully charged.

(6) The old inhaler can be recharged and resealed by the chemist.

(7) When for use in maternity hospitals or by a doctor there is no need for it to be sealed, as the inhaler can be replenished by simply pouring chloroform in through one end.

(8) It is impossible to overfill, for the chloroform will overflow from one or other end.

CORRESPONDENCE

A TRIBUTE TO SIR ROBERT JONES

To the Editor of THE LANCET

SIR,—The death of Sir Robert Jones, of Liverpool, has taken from us one of the most distinguished of English surgeons, the creator of modern orthopædic surgery, and the founder of the British school of orthopædics. Many of his colleagues, patients, and friends feel that a last tribute should be paid to his memory, in recognition of his services to the cause of surgery and to multitudes of patients, and to recall his service to the Army during the Great War. Sir Robert Jones was regarded throughout the world as the greatest orthopædic surgeon of all time; it is only fitting that his supreme merit should be recognised in this way, and that his example should constantly be brought to mind as an incentive and encouragement to those who come after.

It is hoped to be able to arrange to include in our benefactions Liverpool, the Royal College of Surgeons of England, and perhaps other bodies with which he was associated, if, as we feel sure will be the case, an adequate sum of money is received in response to this appeal.—We are, Sir, yours faithfully,

DERBY,
Chancellor of Liverpool University; Secretary of State for War 1916–18 and 1922–24.

ARTHUR STANLEY,
Chairman, British Red Cross Society; Treasurer of St. Thomas's Hospital.

HOLBURT J. WARING,
President, Royal College of Surgeons.

MOYNIHAN,
Past-President, Royal College of Surgeons; Chairman, Army Medical *Advisory Board.*

E. FARQUHAR BUZZARD,
Regius Professor of Medicine, Univ. of Oxford.

W. LANGDON BROWN,
Regius Professor of Physic, University of Cambridge.

J. W. DOWDEN,
President, Royal College of Surgeons, Edinburgh.

FRANK CRAWLEY,
President, Royal College of Surgeons, Ireland.

HAROLD B. FAWCUS,
Director-General, Army Medical Services.

WICKLOW,
President, Central Council for the Care of Cripples.

GEORGIANA BULLER,
Vice-Chairman, Executive Committee Central Council for the Care of Cripples.

WINIFRED PORTLAND.

A. F. LONDON.

ALBERT LIVERPOOL.

H. R. HURTER,
President, Liverpool Medical Institution.

ALFRED GATES,
Lord Mayor of Liverpool.

H. J. W. HETHERINGTON,
Vice-Chancellor, Liverpool University.

HAROLD STILES.

R. E. KELLY,
Professor of Surgery, Liverpool University.

W. I. DE C. WHEELER,
Past-President, Royal College of Surgeons, Ireland.

CHARLES J. MACALISTER.

C. THURSTAN HOLLAND.

D. P. D. WILKIE,
Professor of Surgery, Edinburgh University.

A. G. HUNT.

W. J. MAYO,
Rochester, Minn., U.S.A.

C. H. MAYO,
Rochester, Minn., U.S.A.

W. E. GALLIE,
Toronto.

ARTHUR STEINDLER,
President, American Orthopædic Association.

WILLIS C. CAMPBELL,
Past-President, American Orthopædic Association.

DE FOREST P. WILLARD,
Secretary, American Orthopædic Association.

PUTTI,
Bologna.

NOVÉ-JOSSERAND,
President, International Society of Orthopædic Surgery.

MURK JANSEN,
Leiden.

H. A. T. FAIRBANK.

R. C. ELMSLIE.

W. ROWLEY BRISTOW.

G. R. GIRDLESTONE.

HARRY PLATT.

NAUGHTON DUNN.

D. MCCRAE AITKEN.

S. T. IRWIN.

T. P. MCMURRAY.

A. S. BLUNDELL BANKART
President, British Orthopædic Association.

Subscriptions may be sent to Mr. Blundell Bankart at 58, Harley-street, London, W.1.

Feb. 9th, 1933.

THE ADMISSION OF WOMEN TO THE G.M.C.

To the Editor of THE LANCET

SIR,—The letter by Dr. Jane Walker and Dr. Letitia Fairfield, suggesting the desirability of the election of a woman member on the General Medical Council, we feel sure voices the opinion of all medical women. It seems appropiate that as women now share in the work of all branches of medicine, that a place should be found for one of them on such a thoroughly representative body. Candidates are available whose opinion and advice could not fail to be of value in many matters which come within the province of the Council.

We are, Sir, yours faithfully,
RUTH NICHOLSON,
MARGARET JOYCE,
VERA FOLEY.

Liverpool, Feb. 13th, 1933.

To the Editor of THE LANCET

SIR,—I should like to support the appeal of Dr. Jane Walker and Dr. Letitia Fairfield for the election of a medical woman to the General Medical Council. Just as women are now members of the House of Commons and of most public bodies throughout the Kingdom, so it seems only just and natural that there should be at least one on the G.M.C., seeing that they constitute nearly 10 per cent. of the names on the medical register. Previous to each step which has been taken during recent years in the admission of women to public life there have been gloomy prophecies of the disastrous results which would inevitably follow as a result. Not one of these dismal vaticinations has ever materialised; the presence of women on public bodies of the most varied character has been abundantly justified by experience. Similarly, I believe the election of a woman on the G.M.C. would add to the carefulness of its deliberations and to the wisdom of its decisions, and would make it even more representative than at present of every side and aspect of professional life.

Experience in connexion with other medical bodies has already shown that there would be no difficulty in finding a suitable woman candidate.

I am, Sir, yours faithfully,
J. WALTER CARR.

Cambridge-terrace, Regent's Park, N.W., Feb. 10th, 1933.

MASKED HYPERTHYROIDISM

To the Editor of THE LANCET

SIR,—I read with great interest Mr. Cecil Joll's letter in your issue of Feb. 4th. The presence of thyrotoxicosis in association with a thyroid gland which is *strictly* normal in size is difficult to prove. It must, however, be accepted that gross cardiac disturbance may result from thyroid intoxication when the gland is neither visibly nor palpably enlarged even in a very thin individual; this point I attempted to emphasise in my paper. In addition, although there may be no increase in size the consistence of the whole or a part of the gland may be altered, and this alteration appreciated by palpation. If then, as Mr. Joll says, "thyrotoxicosis never occurs in association with a thyroid gland

Pathology and Bacteriology, and it may be that someone referring to the literature in the future may be led into error. As this was, I believe, the first case in this country in which the diagnosis was made during life and subsequently confirmed, I would add that the credit for making the diagnosis belongs to Dr. B. Barling, under whose care the patient was.

I am, Sir, yours faithfully,

G. W. GOODHART.

Group Laboratory, Archway Hospital, N.,
Feb. 11th, 1933.

CAVITIES IN PULMONARY TUBERCULOSIS

To the Editor of THE LANCET

SIR,—Cavities in tuberculosis of the lungs are most undesirable items in this disease, and if present should be if possible closed by some means or another. The principal dangers of an open cavity are hæmorrhage, continuance of sputum with tubercle bacilli, and reinfection of other parts of the lungs. To my mind the presence of a cavity is one of the chief indications for collapsing the lung, thereby causing the cavity to close, and so inducing it to heal. If collapse of the whole lung should prove impossible or inadvisable, then in many cases the cavity, usually an apical one, may be closed by an extra-pleural plombage. The mechanical means at our disposal for this purpose of obliterating cavities are several. Artificial pneumothorax, a procedure where the scope and chance of success has been greatly enlarged by the recent developments of methods of adhesion cutting. Phrenic avulsion, an intervention which will often induce a cavity, even an apical one, to become smaller and eventually heal. Extra-pleural plombage, which is a local operation and by present methods proving to be very satisfactory. Finally, there is extra-pleural thoracoplasty, a procedure which is rather losing ground owing to the developments of other less severe methods of dealing with the situation.

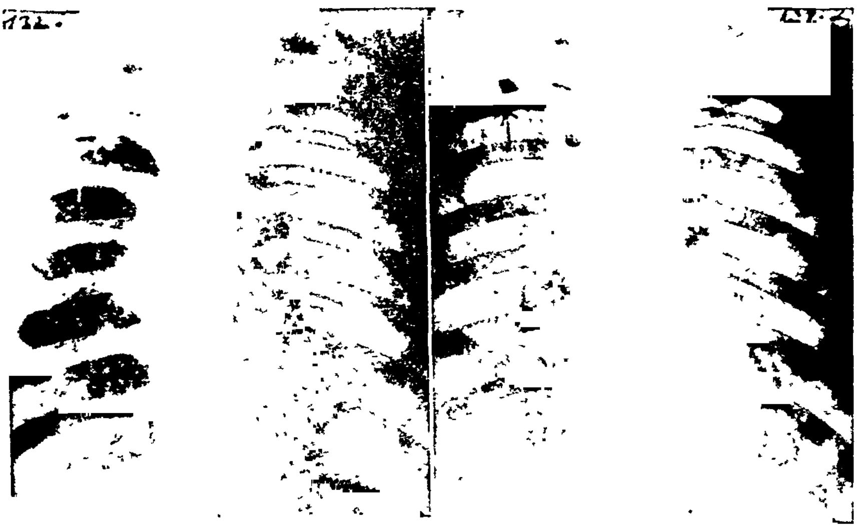


FIG. 1

FIG. 2

Radiogram showing the cavity in the lung before and after two months' treatment.

I would always give, however, a certain time before interfering, unless there are good reasons for immediate intervention, because sometimes these cavities, even quite big ones, heal by themselves without any surgical procedure, and occasionally in a very short time. This is extremely interesting and seems almost impossible. The following case is one instance among a few of which I have had experience :—

Male, aged 26. Admitted to the Victoria British Sanatorium, Davos, on Oct. 13th, 1932. Radiogram (Fig. 1) showed a large oval-shaped cavity in the right lung. Blood sedimentation test 28 mm. in first hour and 58 mm. in second hour. Artificial pneumothorax contemplated and explained to the patient. One month later blood sedimentation test was 18 mm. in first hour and 40 mm. in second hour. On Dec. 13th—i.e., two months later—a further radiogram was made which showed the cavity practically closed (Fig. 2). Blood sedimentation 7 mm. in first hour and 24 mm. in second hour. Thus in two months, with no treatment except rest and calcium by the mouth, this quite large cavity was almost closed.

I am indebted to Mr. P. G. Sutton, M.S.R., of the X Ray Institute, Davos, for the radiograms.

I am, Sir, yours faithfully,

BERNARD HUDSON, M.D., M.R.C.P.

Victoria British Sanatorium, Davos-Platz,
Switzerland, Feb. 8th, 1933.

PANEL INVESTIGATION BY REFERENCE

To the Editor of THE LANCET

SIR,—Your weekly article in Panel and Contract Practice is usually so good that you will perhaps allow me to draw attention to an inaccuracy in your note this week on Investigation by Reference, where you say (p. 331):

> "It seems preposterous that a practitioner should be put to the trouble involved in defending his reputation before a medical service subcommittee because he criticises to the clerk of the committee the working of a clause of the regulations with which he was unfamiliar."

I do not think this has ever happened, and so far as London is concerned I am confident that it never will. Any doctor is at liberty to put forward criticisms ; it is only thus that the regulations can be improved ; but for one to be constructive it is advisable that the critic make himself familiar with the regulations, and had this doctor done so he would have learnt that the proper channel for such criticisms is through the panel committee to the Insurance Acts Committee which deals with the Ministry of Health. It is quite useless to describe a clause as "autocratic" when writing to an official who is only doing his duty.

But it was not for the reason stated above that this case was referred to the medical service subcommittee. Your article says (p. 330, column 1) he "concluded his letter to the committee with the following sentence : 'The remuneration received for the treatment of panel patients does not encourage me to give any more than very ordinary treatment.'"

(9) It can be easily sterilised by boiling.

(10) The inhaler I have had constructed measures 3 by 1½ in. *and the distance between the two open ends is ¾ in.*

This inhaler is at present being tried out by me at the City of London Maternity Hospital, and at the Jewish Maternity Hospital.

I am, Sir, yours faithfully,

Harley-street, W., Feb. 8th. R. CHRISTIE BROWN.

BED TENTS FOR ADMINISTERING OXYGEN

To the Editor of THE LANCET

SIR,—In your issue of Feb. 4th (p. 245) Dr. Poulton writes that the first bed tent for administering oxygen was devised by me. This was a wooden chamber, *into which the bed could be comfortably run, fitted* with windows, and with an oxygen supply and a fan circulating the air. It was built for me at the London Hospital before the war, and was in use when the King and Queen visited the hospital as Prince and Princess of Wales. I then had a chamber made of metal and glass, into which the spring mattress, carrying patient and bedding, could be run. Finally I thought of the bed tent, and this Sir Robert Davis, of Messrs. Siebe Gorman and Co., made for me; the firm's new model is described by Dr. Poulton. I did not add a cooler to this tent because I arranged a fan to blow over the patient's face, and also had the bed *put near an open window. In this tent I kept patients* for many hours a day, and found that continued oxygen treatment had a beneficial effect on chronic ulcers of the leg. One such ulcer, skin-grafted by Dr. Leonard Colebrook, healed very quickly. The bed tent was shown to the Physiological Society, but clinicians showed no interest in it, although it offered great advantages for treatment of pneumonia and other troubles. The Americans copied the bed tent and added a cooler; several models are now on the market, but not one of the pamphlets describing this invention, so far as I have seen, has given any credit to me. The American bed tents and Dr. Poulton's differ materially only in the adding of a cooling device, which is an improvement.

I hope the bed tent will now come into use.

I am, Sir, yours faithfully,

LEONARD HILL.

The London Clinic and Institute of Physical Medicine
Ranelagh-road, S.W., Feb. 10th, 1933.

EARLY DIAGNOSIS OF MALIGNANT DISEASE

To the Editor of THE LANCET

SIR,—In his letter in your last issue Mr. Donaldson says that in most cases carcinoma of the cervix starts on the vaginal surface of the cervix and can be suspected in the early stages. No one can disagree with this, but my own experience is that in women who have had children it is easier to suspect cancer than to say positively that cancer is not present. Large numbers of women who complain of no gynæcological symptoms are found to have lacerations and erosions of the cervix. Who is prepared to say that malignant change is not taking place at the base of a small tear or at the edge of an erosion? The only way for the "specialist" to feel safe is for him to examine all these cases under an anæsthetic and possibly excise pieces for section. How many unnecessary operations this would lead to I shudder to think. Surely our duty is to educate the public to visit their doctors when they notice a change in the behaviour of an organ—as well as when they are ill, uncomfortable, or in pain—rather than to demand that they should come at regular intervals asking to be assured that there is no disease. The good doctor suspects and excludes cancer without his patient ever thinking of the dread word, and there is quite enough cancerphobia about without encouraging more of it. To ask a doctor to exclude cancer in an apparently healthy person is asking the impossible. In certain situations this can be done, but in others even a "specialist" is helpless, and failure in one case would undo all the good resulting from the successful examination of many others.

I am, Sir, yours faithfully,

ARNOLD L. WALKER.

Harley-street, W., Feb. 14th, 1933.

To the Editor of THE LANCET

SIR,—Some misapprehension appears to have arisen over some remarks which I made at the opening meeting of the London Cancer Society, and which inspired the words in your annotation to which Mr. Malcolm Donaldson has objected. My short paper was incorrectly reported (owing to the illness of the secretary) and the draft was not submitted to me before being sent to THE LANCET.

I made no reference to periodic medical examination. Although I agree with Mr. Donaldson as to the ideal of such a procedure, I feel, with you, that it is hardly practicable at the present time. The main purpose of the first part of my paper was to emphasise the frequency with which patients consult their doctors for symptoms which are entirely attributable to cancerphobia. These patients, in my experience, rarely use the word cancer and make no specific reference to their fears; I believe, in fact, that many of them are not conscious of the source of their trouble. The responsibility rests upon the doctor to disabuse their minds of all possibility of malignant disease, and this can only be successfully achieved if the reassurance is accompanied by the use of the word cancer. It is of little use to say to such a patient that nothing abnormal can be found. He (more often she) only suspects that the truth is being concealed. If, however, we say, in so many words, "there is no sign of cancer, tumour, or malignant trouble of any sort," symptoms which have resisted all sorts of treatment will not infrequently clear up forthwith.

I believe that subconscious cancerphobia is almost as frequent as conscious fear of the disease. But the important point is that in neither variety is the patient likely to express the fear explicitly. In the one case he is not aware of it, and in the other he is ashamed to own to it. Much unnecessary suffering could be saved if medical men would more fully appreciate the mentality of these patients. It is the rare case of words being more important than deeds.

I am, Sir, yours faithfully,

MAURICE E. SHAW.

Wimpole-street, W., Feb. 10th, 1933.

ADENOMA OF THE PANCREAS

To the Editor of THE LANCET

SIR,—In your account of the meeting of the Association of Clinical Pathologists (p. 307) a case of adenoma of the pancreas causing hypoglycæmia, presented by my colleague Dr. Murray, is reported as having been in the Archway Hospital. In fact the patient was in St. Mary Islington Hospital; and I rectify the mistake as the case has already been fully recorded by Dr. W. G. Barnard in the *Journal of*

PANEL AND CONTRACT PRACTICE

Sickness Claims

THE sickness experience of the Hearts of Oak Benefit Society, as reported in the daily press, brings to light some interesting facts. During the last eight years, that is during the period of the most acute depression from unemployment, there has been a continuous yearly rise of sickness claims. When work was abundant claims were light, but in industrial (especially mining) areas there is now an immense increase in sickness. Apparently the actuarial calculation for the sickness of young people is not in accordance with the society's experience. Young people are claiming much more than they did; they have no jobs and nothing to do except to think about themselves, and there is a consequent increase in claims for mental and nervous depression. In the first week of January there was an increase of 100 per cent. in new claims, in the second week of 110 per cent., in the third of 130 per cent., and in the fourth of 200 per cent. It is suggested that these claims, approximately 10,000 a week, were almost entirely a result of influenza, and this made more serious by a low standard of physique and an exaggeration of under-nourishment, both backed up by mental depression. Even in happy times influenza is apt to leave depression behind, and an increase of nervous and mental breakdown is to be expected, brought on partly by influenza and partly by the absence of happiness and of employment, especially among young people who have failed to obtain employment since they left school. While certifiable insanity may show little variation, it is worthy of note that the number of out-patients attending the Maudsley Hospital jumped from 1608 in 1930 to 1993 in 1931. Figures for 1932 are not yet available. The effect of the prevalence of the influenza epidemic is evident from the number of prescriptions received by the pricing bureaux of insurance committees.

Effect of Removal from the Panel

The Minister of Health can only remove a doctor's name from the panel after an inquiry which has satisfied him that the continuance of the practitioner on the panel would be prejudicial to the efficiency of the service. His action is administrative after an inquiry committee has reported its findings, and from his decision there is no appeal to the courts. This procedure is apt to be confused in the lay mind with that of the General Medical Council which has power to erase a doctor's name from the Register if it is proved to the satisfaction of the Council that he has been guilty of infamous conduct in a professional sense. This is a far greater penalty than removal from the panel, for it prevents a doctor from acting as a medical practitioner at all. It does not, of course, take away his medical knowledge—he could diagnose and treat a case just as well before as after the decision—but he cannot give a medical certificate which would have any value legally, he cannot give a death certificate, and he cannot sue for his fees. If an insurance committee or a local medical committee or a panel committee reports to the Minister that the continuance of a practitioner on the panel would, in their opinion, be prejudicial to the service, he must (but if the report comes from other sources, he may) set up an inquiry committee consisting of a lawyer and two doctors who may go into anything in connexion with this doctor's practice. Due notice is given to the doctor of all points of inquiry, evidence is given on oath, barristers or solicitors are employed, and the rules of evidence are strictly adhered to. The committee reports to the Minister who decides on that report the penalty to be imposed—after consultation with the advisory committee. It may be a fine, in which case the doctor has the right to be heard on the question of its amount. It may be suspension of decision for a period, to give the doctor time to furnish evidence of subsequent good conduct. It may be permission to retire from the panel, on the written undertaking that he will not rejoin elsewhere without the Minister's consent. Or it may be immediate removal from the panel list. This decision does not prevent the doctor from carrying on with private work in practice, but the regulations definitively prevent him acting either as an assistant or as a deputy (including locum tenency) to another doctor's practice. It might be thought that, as the principal is responsible for the acts of his assistant or deputy, he could employ whomsoever he wished to do the work he could not do himself, but the regulation is quite clear on this matter. A doctor removed from the panel cannot act as locum tenens, assistant, or deputy to another panel doctor. He could, of course, have a partner who is on the panel, but he would not himself be able to treat any panel patients for or on behalf of that partner.

Inspection of Surgeries

Gloucester insurance committee has decided to revert to the practice of inspecting the surgeries and waiting-room accommodation of its insurance practitioners. There had, it seems, been a few complaints. The regulation is brief but important:

> A practitioner is required to provide proper and sufficient surgery and waiting-room accommodation, having regard to the circumstances of his practice.

No standard is laid down, but obviously such things as heating and seating must be taken into consideration, for it is not to the advantage of the service nor of the practitioner for insured persons to be overcrowded when attending for treatment nor that they should be expected to sit in badly ventilated and insufficiently heated rooms. On the other hand, it is not suggested they should have the use of the doctor's best room when they come in, as they often do, wearing their working clothes and muddy boots. Some time ago a discussion took place whether a couch should be provided in the consulting room. Was a couch accommodation or was it apparatus? The insurance committee has no authority over apparatus, but it has over accommodation; hence the matter was important. The doctor in this case said he never used a couch in his consulting room; any examination in the recumbent position was done at home in the patient's bedroom, which, he said, was more suitable for the purpose, especially in the case of women patients. In view, however, of emergency treatment that may at any time be required it can hardly nowadays be contended that a couch is not a necessity in the consulting room.

TINFOIL FOR HOSPITALS.—The tinfoil fund of the Ancient Order of Druids last year received over 100 tons of tinfoil, lead capsules, tooth-paste tubes, and other waste metals averaging £20 per ton in value which were sold for the benefit of hospitals. Since the fund was started in 1912 more than £20,000 has thus been realised.

There is here a definite suggestion that this doctor had one scale of treatment for the panel and another for the private patient. It is a tradition of our profession that, whether one is paid or whatever one is paid, we should do our best for the patient under the conditions in which we are working, and as a medical member of the referring subcommittee I should always in such a case vote in favour of a resolution for "investigation by reference." Further, as the representative of the Minister, I should do the same, for the doctor is under contract with him to give the same standard of treatment to his panel patients as he does to those patients for whom he is paid on an ad-hoc basis. I cannot feel that in this case an investigation by reference was "rashly ordered."

We may agree that any investigation as to our conduct is a source of worry however clear our conscience may be. But there is another side to be considered. These investigations are a great safeguard to the doctor concerned. Whenever "any sort of lie about a doctor" is once started it is well to have it nailed to the counter. Some anonymous publicity is not a very big thing to put against the advantage of printed evidence that the complaint had been inquired into and shown to be groundless. There must be many of us who know that misstatements have been circulating for years about some case of our own that we should like to have fully investigated in order to clear our reputation, and such lies are not always started by laymen. In this case "there was no evidence that this doctor had ever treated a panel patient differently from a private patient"; but the "sort of lie about a doctor to the clerk of the committee" was written by himself; and it is difficult to see how he could claim "some monetary compensation for worry and loss of time" even if funds were available and if there were any analogy in our legal procedure for such a payment.

Finally, in justice to our clerk, may I point out that claims for refund are not selectively referred by him to the medical benefit subcommittee as your opening sentences seem to imply; all of them pass to us ipso facto.—I am, Sir, yours faithfully,

T. B. LAYTON.

London Insurance Committee, Wilmington-square, W.C., Feb. 14th, 1933.

THE PATHOLOGY OF APPENDICITIS

To the Editor of THE LANCET

SIR,—In the leading article in your last issue, in which you reviewed the work and views of Prof. Aschoff, you were good enough to allude to the investigations by Dr. A. Paine and myself of some 20 years ago. I should like to add that in addition to the experimental work we investigated the pathology of early human appendicitis in specimens taken direct from the operating theatre and found that in them the early changes commenced in the submucosa and not on the surface of the mucous membrane, and as in the blood infection of rabbits the lymphoid tissue first became necrotic. We were working at this subject entirely from the aspect of rheumatism, but ten years before, Adrian had shown that appendicitis could occur in animals from blood infection and had also studied the same in man. By 1913 the German investigators had done much upon this problem.

There is no shadow of doubt in my mind that appendicitis can arise in this way, probably, as we experimentally demonstrated, and others had commented upon, from a source such as acute tonsillitis. I do not pretend to assert that appendicitis is always caused by infection from the blood stream, but to assert the opposite would be equally, even if not more, rash. On the face of it appendicitis following quickly upon an acute tonsillitis is more probably the result of a blood infection than a mysterious change of virulence in the microbic contents of the lumen of a previously healthy appendix, for the evidence in favour of this is good, reasonable, and scientific.

When an appendix has been damaged and an ulcer having formed has healed by scar formation with contraction, inspissated material beyond the stricture may, as we know, form a sterco1ith. Doubtless then the dangerous attack may now be dependent upon a local as well as a general factor. He is a bold pathologist who would deny the occurrence of appendicitis by a blood-borne infection.

I am, Sir, yours faithfully,

Harley-street, W., Feb. 13th, 1933. JOHN POYNTON.

"DIAGNOSTIC EXPLORAL SUCTION" OF THE NASAL SINUSES

To the Editor of THE LANCET

SIR,—The July, 1932, number of the *Journal of Mental Science* contained statistics of the findings in 880 cases of mental disorder whose nasal sinuses were investigated by the exploratory technique evolved by Dr. Patrick Watson-Williams. In these cases of psychosis from sinus disease it not infrequently happens that the indications in the nose of the presence of sinusitis are not typical or may even be absent; the psychotic state, thus resembling other toxæmic states arising from foci of sepsis, increases as the evidence of external focal discharge diminishes. Hence the importance of this special technique in the search for sources of toxæmia in psychotic patients cannot be over-estimated, especially in cases where there is an early history of symptoms referable to the upper respiratory tract, and in those cases where psychosis appears immediately after an attack—not infrequently mild—of what is regarded as influenza.

In his letter to you of Feb. 4th (p. 276) Dr. Watson-Williams submits for general adoption a more precise nomenclature for this technique in order that records of investigations in sinus disease can be put upon a uniform basis. That records should adequately indicate the exact mode of investigation has been recognised in such research in cases of mental disorder. The Board of Control in Part I. of its Eighteenth Annual Report for the year 1931 (pp. 108–109) indicates the importance of this matter thus:

> "To those who report that search for evidence of sinusitis or other foci of chronic infection has failed to reveal it as a relatively common condition, we venture to make the request that they will make quite sure that they are using the precise technique employed by those who report positive results and, if they do not use this technique, to make that fact clear."

Of the terms which Dr. Watson-Williams suggests, that of "suction-exploration" appears to me the most useful. I am, Sir, yours faithfully,

T. C. GRAVES.

Birmingham, Feb. 13th, 1933.

THE INDUSTRIAL DOCTOR.—The parenthetic clause in line 10 of the second paragraph of Dr. Castellain's letter last week, should have read "save for medical and surgical first-aid."

comprehensive monograph, 'The Oligochæta,' published by the Clarendon Press in 1930, and at once recognised as a standard work. In it he discussed, with much originality and breadth of view, the questions raised by the morphology, phylogeny, and geographical distribution of these animals. Among his too rare excursions into more general subjects may be noted a remarkable address on the History of the Cell Theory, delivered before the Linnean Society in November, 1931, in which he demolished the statement current in text-books 'that the cell theory was formulated by Schleiden and Schwann in 1839.'

"Much of Stephenson's wide knowledge and sound judgment," Dr. Calman adds, "was devoted to clarifying the work of younger zoologists whose researches he directed and whose papers he edited, and all of these will retain a memory of a wise counsellor and a singularly attractive personality."

ALFRED PARKIN, M.D. Durh., F.R.C.P. Lond., F.R.C.S. Eng.

PHYSICIAN TO THE ROYAL VICTORIA INFIRMARY, NEWCASTLE-ON-TYNE

WE regret to announce the death of Dr. Alfred Parkin, one of the leading physicians of the north of England, which occurred suddenly at his residence in Newcastle on Wednesday, Feb. 8th, in the 54th year of his age.

Alfred Parkin was the youngest son of the late Mr. George Parkin, of Gateshead. He was born in Wrekenton in 1879, and received his general education at the Royal Grammar School, Newcastle. He proceeded to the study of medicine at the Durham University College of Medicine, graduating in 1901 with first class honours, after a brillant scholastic career, during which he won the Tulloch scholarship in 1898 and the Charlton and Gibb scholarships in 1901. After studying in Berlin and Vienna he took the English conjoint qualifications in 1902, the F.R.C.S. Eng., and M.D. Durh. in 1904, and the M.R.C.P. Lond. in 1908; he was elected F.R.C.P. Lond. last year. He held the house appointments at the Newcastle Infirmary, being house surgeon to Prof. Rutherford Morrison, and house physician to Sir Thomas Oliver. During the time of his house physicianship the King Edward VII. bridge over the Tyne was in course of construction, and several cases of caisson disease were admitted to the wards. Stimulated by his chief, Sir Thomas Oliver, to whom he was much attached, he made a study of the clinical features and carried out some experimental work. This became the subject for his M.D. thesis, which was published in the *Northumberland and Durham Journal* for 1905, and subsequently in book form, and was a model of exact observation and recording.

DR. ALFRED PARKIN

Photograph by James Bacon

When his resident appointments at the infirmary terminated he acted as assistant for a short time to the late Dr. Mearns, of Gateshead, and then entered on a fruitful period as resident medical officer to the Newcastle Dispensary, then situated in Nelson-street. He always looked upon this period as supplying him with very valuable experience, and it was while visiting in the homes of the poor that he laid the foundation of that understanding of the sick which was so marked a characteristic with him. About this time he was inclined to a surgical career and for a short period acted as one of the surgical registrars at the Royal Infirmary. His interest in surgical pathology was very keen and he was an excellent demonstrator in that subject, but the technique of surgery did not much attract him, and the investigation of cases and problems of diagnosis appealed more to his philosophic turn of mind, so that he soon turned towards medicine as a career. And no man ever made a happier choice. His election as assistant physician to his old hospital in 1908 settled all questions of a vocation, and from henceforth he gradually became one of the best known and sought after consulting physicians in the north. In 1913 he was elected to the full staff of the infirmary, and at the time of his death he held the posts of honorary physician to that institution, consulting physician to the Gateshead Union Hospital, and lecturer in therapeutics to the Durham University College of Medicine, where he had previously served as assistant demonstrator in anatomy, physiology, and pathology. During the war, with the temporary commission of Major R.A.M.C., he was one of the officers in charge of the First Northern General Hospital, located at the Armstrong College.

As a physician Alfred Parkin was a notable success. For him the problem of the moment was everything and he had a remarkable power for concentration. In consequence the patients entrusted to his care all felt that confidence, which is engendered by undivided attention. He took note of everything in the circumstances of the sufferer and investigated the details and history of illness with punctilious care. His quiet impressive manner was a great asset: he was quite unconscious of this, but all who worked with him appreciated the fact. And much above his knowledge and skill, was his understanding of the sick and of all that illness means in a household. He was often the "doctor's doctor," than which no higher compliment can be paid. As a man of affairs he was more reticent than shy, but he never shirked his duty and his opinion on business questions was always highly valued by his colleagues.

Parkin was a great teacher and especially at the bedside. In ordinary hospital practice he found so much of importance that he was a little impatient of the search for the unusual, and it became his life's occupation to drive home to his students, who were devoted to him, the lessons of their everyday work. As a lecturer he was not so happy—rhetoric did not appeal to him, and he liked an association more intimate than the lecture theatre provided. It was probably for the same sort of reason that he never wrote much and that he did not greatly value the opportunities given by medical societies to express his views in any casual or desultory manner. It was characteristic of him to want to get to the bottom of everything, at whatever cost of time or trouble. This attribute explained his interest in medical history and expressed his desire to get at the beginnings

OBITUARY

ALFRED EICHHOLZ, C.B.E., M.D. Camb.

LATE CHIEF MEDICAL INSPECTOR, BOARD OF EDUCATION

Dr. Eichholz, whose death on Feb. 6th was announced in our last issue, was born at Manchester in 1869. His father was a cotton merchant who came over to this country from Hildesheim; his mother was Babet Praeger of Amsterdam. Eichholz went to Manchester Grammar School and from there to Emmanuel College, Cambridge, where in 1891 he took a first class with distinction in the Natural Science Tripos, and became a Fellow of his College two years later, lecturing from 1895–98 on natural science and demonstrating physiology in which he did some original work. He completed his clinical studies at St. Bartholomew's Hospital, qualifying M.D. Camb. in 1895 and M.D. three years later. Directly upon this he was appointed inspector of schools for West Lambeth, and the remainder of his life was devoted to the welfare of school-children. For he became in 1908 a medical officer of the Board of Education and in 1919 chief medical inspector to the Board; his retirement in 1930 was retirement only in name, for he then undertook for the Board and the Ministry of Health the inquiry into the social conditions of the deaf of which the report appeared shortly before his death. Dr. Eichholz early recognised the defects in the health of school-children which impaired their working capacity late on. He learnt the home conditions under which many of them lived and his position at the Board of Education told him what resources were available or might be made available to remedy the defects which he found. From this knowledge he was able to frame policies which would provide remedies or remove obstacles to their employment.

DR. EICHHOLZ

Photograph by Elliott and Fry

Medical inspection and treatment gave Eichholz unrivalled opportunities of coöperation with medical officers and administrators. During his 22 years of activity at the Board of Education he was frequently called on to give evidence before Government committees. He was a witness on the Employment of Children in 1902, on Physical Deterioration in 1903, and on the Feeble-minded in 1908. His interest in social conditions, joined with his medical knowledge made his survey of the conditions of munition workers fruitful of results, a service for which in 1919 he was made C.B.E. Eichholz possessed qualities which marked him out for a good inspector. It was not easy to shield from him weak spots in the armour, but he was always constructive and helpful in criticism. He had a deep philosophic, scientific, and educational background, but his knowledge and thought were always in relation to something yet deeper. They had for their setting human needs and strivings, and not merely these in general but as they came before him in the individual, especially the individual handicapped child. It is impossible to over-estimate what, in particular, the blind and deaf and dumb child, adolescent and adult, owed to him. He made himself acquainted with the special problems and difficulties, and his knowledge of every school for the blind and the deaf in the country was intimate, for they had grown up under his guidance. In matters of administration, education, and industrial training, his colleagues at the Board could rely upon him in full assurance for help and advice; he could always either point out a way for meeting the needs of a particular school or teacher or child, or would set to work to open out a way. He never rested until the best had been done that could be done.

And then his way of doing things was always gracious and courteous. That is the unfailing testimony of his colleagues, of teachers, of parents, and children. His graciousness and courteousness were no mere accident, a pleasant added trait among other traits; they sprang from a life whose roots went deep. He was sustained by and lived out the Jewish faith and Jewish ideals. All who knew him in everyday life felt how entirely fitting was the tribute paid by his close friend, the Rev. E. Levine, when he reminded those who stood round the coffin at the cemetery synagogue, that, like Moses of old when he cast the tree into the bitter waters of Marah and they became sweet, so did Eichholz in private life, on committees, in the office, or in the school, make bitter waters sweet. The memory of his long service for his country will live in many directions and in many quarters, but the uppermost remembrance in the minds of his friends and colleagues will be the spirit of kindness, self-effacement, and helpfulness which animated all he was and all he did.

Dr. Eichholz married, in 1895, Ruth, younger daughter of the late Very Rev. Hermann Adler, the Chief Rabbi, and had three sons.

THE LATE LIEUT.-COLONEL J. STEPHENSON

In a biographical sketch last week of Colonel Stephenson, brief mention was made of his work as a zoologist. Mr. W. T. Calman, D.Sc., F.R.S., keeper of zoology at the British Museum (Natural History), writes: "Stephenson was eminent both as a teacher of zoology and as an investigator. During his 14 years at Lahore he succeeded in inspiring his Indian students with something of his own enthusiasm for the subject, and several of them have since gained distinction by their researches in very diverse branches of Indian zoology. Later, in Edinburgh, he was a prominent member of the very active school of zoology directed by Prof. Ashworth, and took an important share both in teaching and in research. Since removing to London three years ago he had been a valued member of the unofficial staff at the Natural History Museum, and as zoological secretary of the Linnean Society, and editor of the *Fauna of British India*, he exerted a widening influence among the younger generation of zoologists.

"His own researches were mainly concerned with the oligochætes, the group comprising the earthworms and their immediate allies. On these he published a long series of memoirs leading up to a on this new epoch in housing—the epoch of no general subsidies—without making what provision they could to insure against a failure of the housing supply during the transition period. The Bill allowed some scope for himself, as the Minister of Health, to approve applications for subsidised houses which had already been put forward. In committee it would be his object to find a reasonable provision which would allow bona fide schemes which were advanced to a considerable degree to go through under the old subsidy regime. As to the maintenance of standards of building, the state of affairs when this Bill passed into law would be this: the local authorities would have full power, both under by-laws and under the Town Planning Act, to impose their own standards of housing in their localities. The Ministry of Health would also retain control by its authority to approve the guarantee for the building societies' proposals. But further than that, it was his intention to accept certain amendments, which were to be proposed at a later stage by Sir P. Harris, relating to the size and density of houses, which would have the effect of maintaining the present standards in that respect.

It was his intention to set up a committee charged with the task of reviewing the housing and slum clearance problem. He would propose to include in the inquiry of this committee any possible addition in the way of powers of re-conditioning, particularly power for the compulsory purchase of houses by local authorities, in order that they might be re-conditioned—a power which was the only important power which they did not possess under existing legislation. The inquiry should include the price at which such houses should be purchased. There ought also to be some investigation into alternative powers in default of the local authorities. Slum clearance was an urgent necessity, and if they could not get it done by one power it must be done by another. They would never deal with the slums efficiently until they concentrated the subsidy on the slums. With the knowledge and agreement of the Chancellor of the Exchequer he said that he would not exclude from the consideration of the committee that there should be some extension of financial assistance from the Exchequer to the method of dealing with slums by re-conditioning, as well as by clearance. It need not, however, go abroad among the local authorities that because the Government were considering any possible means of increasing the efficiency of their legislation that was any reason why the authorities should delay in putting into force the powers to deal with slums which they had at the present time.

The resolution was agreed to.

SCOTLAND

In the House of Commons on Thursday, Feb. 9th, Mr. SKELTON (Under Secretary of State for Scotland), in moving the second reading of the Housing (Financial Provisions) (Scotland) Bill, said that the Slum Clearance Act, 1930, would remain unaltered. The State subsidy of £2 10*s.* per person removed from a slum and the local subsidy of £4 10*s.*, or whatever more might be necessary to re-house the persons so removed, would also remain. But the general subsidy of £9 in towns and £12 10*s.* in rural districts, under the Wheatley Act of 1924, would come to an end. In place of the general subsidy there would be a subsidy of £3 both for town and country districts which was to be used for the specific purpose of the housing of the low-wage earners, who were at present living in overcrowded conditions. The Rural Housing Acts of 1926 and 1931, whereby rural houses were re-conditioned, would remain unaffected. The 1923 Act was swept away. The subsidy to private enterprise for letting purposes was brought to an end. Under the new scheme the State and the local authorities would combine to give a guarantee for building society loans, between the proportions of 70 and 90 per cent., to be used for the purpose of encouraging and financing private enterprise in building. The main problem to-day was not that of dealing with a rapidly-increasing population; it was a problem of the slums and the overcrowded areas. The problem of slum clearance was really one for public enterprise, and they might leave to private enterprise the work of building the houses required. The work of slum clearance went on unchecked. Between 1923 and Dec. 31st, 1932, 20,000 slum houses had been closed and over 19,000 houses had been built to replace them. At Jan. 1st, 1933, there were 7752 houses actually under construction and 2469 approved, but not yet begun. That was a very remarkable result in a time of financial difficulty. The £3 subsidy house was to be confined to low-wage earners who were overcrowded, but not living in slum conditions.

The Bill was read a second time.

Hospitals and Road Accidents

The London Passenger Transport Bill was considered on Report in the House of Commons on Monday, Feb. 13th.

Lieut.-Colonel HEADLAM, Parliamentary Secretary to the Ministry of Transport, moved to delete Clause 53. He said this amendment carried out a pledge which was given by the Government during the committee stage of the Bill. Sections 35 and 36 of the Road Traffic Act, 1930, imposed obligations to provide against liability in respect of third party risks, either by a policy of insurance or by underwriting, involving the giving of security as defined by Section 37 of the Road Traffic Act, and depositing the sum of £15,000 with the Accountant-General of the Supreme Court. The removal of Clause 53 from the Bill really put the Board in the same position as any other persons who owned motor vehicles. Under Section 36 of the Road Traffic Act, insurers were subject to a further liability to pay to a hospital which had given treatment to any person injured by their vehicles reasonable expenses up to the sum of £25. He hoped that the elimination of the clause would give satisfaction to hon. Members.

The amendment was agreed to.

Food Adulteration

ON Feb. 14th, in the House of Commons, Mr. R. J. RUSSELL asked leave to introduce a Bill to amend the Food and Drugs (Adulteration) Act, 1928, and to control the sale of cheese other than whole-milk cheese. He said the Bill proposed that the butter-fat in cheese should be standardised at from 40 to 55 per cent., a percentage which had been reduced by manufacturers to about 16 or 20 per cent. The Bill would secure that all cheese not made of whole-milk would be marked as "skimmed-milk" cheese.

Leave was granted to introduce the Bill, which was brought in and read a first time.

HOUSE OF COMMONS

THURSDAY, FEB. 9TH

Foreign Skimmed Milk

Mr. DREWE asked the Minister of Agriculture whether, in view of the position of the milk industry and the present glut of milk, he would be prepared to prohibit or restrict the entry of foreign machine-skimmed milk as an emergency measure pending the reorganisation of the milk industry.—Sir GEORGE BOWYER replied: My right hon. friend has no powers to take the action suggested. He would draw the attention of my hon. friend to the views of the Reorganisation Commission for Milk on the subject of imports of skimmed condensed milk as set out on pages 138 and 139 of the Commission's Report.

Pasteurisation of Milk

Captain PETER MACDONALD asked the Minister of Health whether his department had now reached any decision as to the value of and need for compulsory pasteurisation of milk and, if so, what his decision was.—Sir E. HILTON YOUNG replied: This is now under the consideration of a committee of the Economic Advisory Council, which is examining the question of disease among milch cattle. Pending their report I am not in a position to make any pronouncement on the subject.

of things. His little brochure on Ambrose Paré is an example of this, and he had previously shown this quality in his M.D. thesis.

"I like to think of Parkin," writes a friend and colleague, "in wrapt attention when his interest was aroused; he always seemed to hold a watching brief for common sense and logic, and his judicial mind usually led him to a conclusion with which most of us had to agree. In debate he was often satirical, but never without justification, and he never seemed to speak until goaded to be outspoken. A great capacity for friendliness was one of his most outstanding characteristics, and he was loyal and staunch through all vicissitudes. None loyal to his memory would wish it to be known how many times he befriended those in trouble, but there are many sad hearts at his passing, and many among his poorest dispensary and hospital patients. Parkin was very fond of children and his affection for them was reciprocated. He took no part in sport, but was very fond of motoring, and he loved the country and country affairs. It was a delight to accompany him to a country consultation; there was never a dull moment on such a journey, for he knew the north country well and he found great interest in all around him."

Dr. Parkin's death was an unexpected blow to a large circle of friends and patients. There is no doubt that he had always given of himself too freely, and that he was often a tired man, for while very chary of undertaking certain work he always concentrated closely on the job in hand, a fact which accounted for his infrequent appearance in public affairs and at learned societies. He seemed to be in good health on the day of his death; he took his ward class as usual in the morning, and one who attended it describes it as exceptionally large and the lecturer extremely happy in his teachings. In the afternoon he made a long car journey to attend a country consultation. He was taken ill on the way home, and died the same night from coronary thrombosis. He leaves no family, but is survived by a widow and by his mother, an old lady of 97, who was his constant care. He and his wife were devoted to one another, and great sympathy is felt for her. Dr. Alfred Parkin was the uncle of the late Dr. G. C. Parkin, who died in December last during a typhoid epidemic while working among his patients at Malton.

* * *

WILLIAM HENRY HARSANT, F.R.C.S. Eng., who died on Feb. 10th at Bristol in his eighty-third year, was born at Epsom and educated at the City of London School. Entering Guy's Hospital he qualified L.S.A. in 1873, and in the following year was gold medallist in surgery and house-surgeon at the hospital. He then went to Bristol as house-surgeon to the General Hospital, became lecturer on anatomy at the medical school, and secured the position of surgeon to the Royal Infirmary, his special interest being in the surgery of the thyroid and middle ear. An accidental infection led to the loss of his right index finger and the decision to abandon surgery for general practice in Clifton, where for many years he was one of the most popular and respected of family advisers. Mr. Harsant was a life-long member of the Bristol Medico-Chirurgical Society, filling all the offices up to the presidency and being for a time joint editor of its journal. His wife predeceased him and he is survived by one of their two daughters.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

New Bills Introduced

IN the House of Lords on Wednesday, Feb. 8th, the following Bills were presented and read a first time: Cancer Hospital (Free) Bill; Samaritan Free Hospital for Women Bill; and the Essex County Council Bill.

The Essex County Council Bill contains provisions for the licensing and control of establishments for massage and special treatment. Clause 54 provides that the provisions of this part of the Bill shall not apply to establishments for massage or special treatment carried on by a duly registered medical practitioner with respect to which there has been lodged with the Council a certificate, in a form to be approved by the Council, and signed by two duly registered medical practitioners practising or residing in the county, not being in partnership with such first-mentioned medical practitioner, or with each other, and not having any financial or other interest in such establishment, to the effect that the medical practitioner carrying on, or proposing to carry on, such establishment is a suitable person to carry on the same at premises used, or to be used, therefor. It is further provided that any such certificate shall not be valid (*a*) with respect to any person or premises other than the person or premises specified therein, or (*b*) for a period extending beyond Jan. 31st next following the date of the certificate.

The Bill also contains miscellaneous provisions with regard to the control of refuse dumps, the pollution of rivers and streams, town planning, and the registration and inspection of premises used for the manufacture of ice-cream.

Housing and Slum Clearance

ENGLAND AND WALES

The House of Commons on Tuesday, Feb. 7th, considered in Committee the financial resolution in connexion with the Housing (Financial Provisions) Bill. Sir D. HERBERT, Chairman of Committees, was in the chair.

Sir E. HILTON YOUNG (Minister of Health) in moving the resolution said it was the necessary preliminary to the Government's scheme for the enlistment of the building societies in an effort to provide housing for the working classes. The outline of the scheme was that a certain guarantee should be extended to the building societies in respect of advances made by them in excess of their normal advances for building. The liability would be distributed in this way: one-third of the excess would be guaranteed by the local authorities, one-third by the Exchequer, and one-third would remain with the building societies. In practice it would amount to this: the normal amount advanced by building societies was 70 per cent. of the value of a building; that would be raised under this scheme to 90 per cent., and the difference of 20 per cent. would be guaranteed in the manner he had described. It was not contended that they would be able by this scheme to build the very cheapest sort of house to let at the lowest rents to the least well-paid classes of wage-earners. But it was contended that already it was possible to provide small houses at such rents as would meet a large part of the demand for houses for the wage earners down to the class just above the very lowest and cheapest of all. In securing that they would have secured a great addition to the supply of houses from private enterprise. That was a big step in advance.

It would be unwise for the Government to embark

PUBLIC HEALTH SERVICES

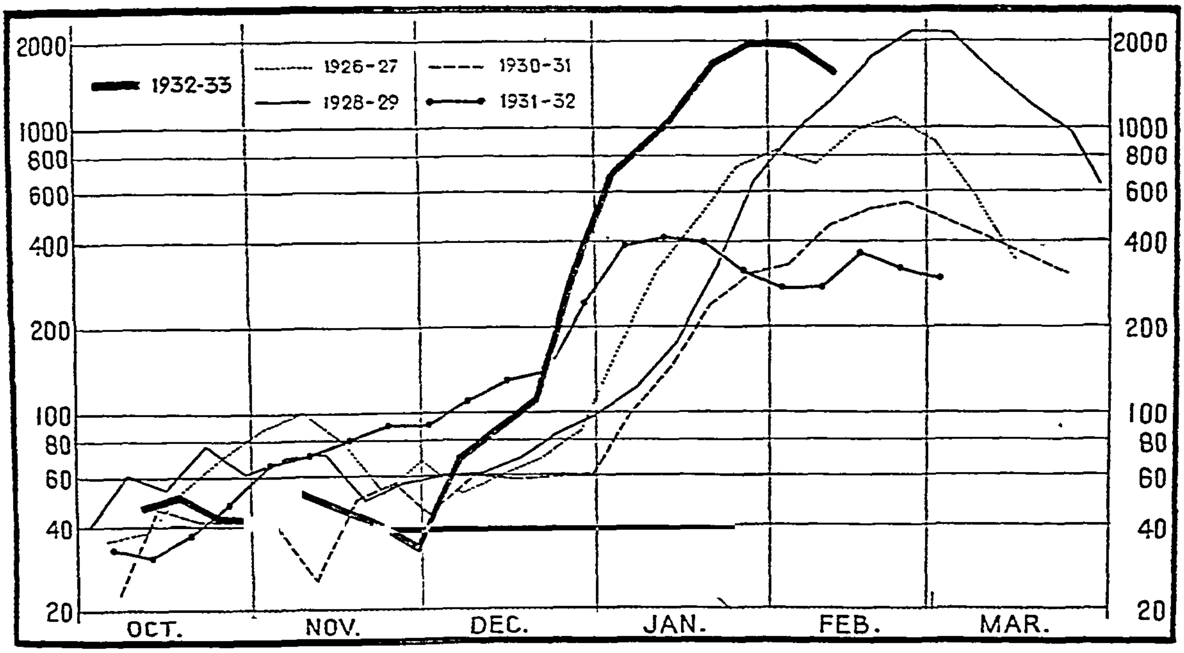


Chart showing the course of various influenza outbreaks in England and Wales. The numbers of deaths are charted as logarithms instead of actual figures, and it will be seen that this greatly exaggerates the earlier stages of the epidemics, and flattens the peaks. (Reproduced with alterations and additions from the League of Nations *Weekly Epidemiological Record* for Jan. 19th.)

Influenza

LAST week's figures show that the outbreak of influenza in this country is now abating. In the seven days ending Feb. 11th there were 1306 deaths in the 118 great towns of England and Wales, against 1934 and 1911 in the previous two weeks, while in London the total fell from 368 to 261. The accompanying chart shows the course of the epidemic in comparison with those of some other recent years. It will be seen that the peak has been reached more rapidly than in 1928-29, when the largest total of deaths in a single week was about the same.

TABLE I

—	118 great towns.	South-eastern area.	Greater London.	Northern area.	Midland area.	Eastern area.	South-western area.	Wales and Monmouthshire.
Jan. 7th	1·73	1·22	1·04	1·70	3·65	0·42	0·57	0·38
„ 14th	2·64	2·56	2·36	2·78	3 25	1·78	0·91	0·98
„ 21st	4·04	3·73	3·63	4·81	4·32	1·36	1·81	1·58
„ 28th	4·91	4·06	4·08	5·66	5·08	5·98	2·60	7·15
Feb. 4th	4·85	4·39	4·12	5 27	4·00	8·71	4·76	7·53

More detailed figures which are now available for the week ended Feb. 4th will be found in our usual analysis of the Registrar-General's weekly return, under the heading of Infectious Disease. Table I., which is reproduced from the return, gives influenzal death rates per 1000 per annum in the towns of the various areas, and shows that the eastern area and Wales were now bearing the brunt, after enjoying comparative immunity until a late stage. The rate for Greater London for the first time rose above the average of the 118 great towns. Table II gives the mortality in the four main age-groups.

TABLE II

—	Ages 0–25		25–45		45–65		65 +		Total deaths
	Deaths.	Per cent.	Deaths.	Per cent.	Deaths.	Per cent.	Deaths.	Per cent.	
Jan. 7th	75	11·0	143	21·0	214	31·4	249	36·6	681
„ 14th	112	10·8	196	18·8	336	32·3	397	38·1	1041
„ 21st	156	9·8	311	19·6	525	33·0	597	37·6	1589
„ 28th	164	8·5	338	17·5	649	33·5	783	40·5	1934
Feb. 4th	155	8·1	339	17·7	603	31·6	814	42·6	1911

Influenza in Glasgow.—A statement issued by Dr. A. S. M. Macgregor, M.O.H. for Glasgow, shows that the outbreak began there at the beginning of December and reached its height during the last fortnight of the month. The fall was rapid, although latterly it tended to taper off gradually and to merge into a period of increase of respiratory affections during the spell of cold weather. The general death-rate was at its highest (28·7 per 1000 per annum) during the week ended Dec. 24th, and the incidence of influenza fell far short of the experience of January, 1929, when the death-rate rose to 50 per 1000. The proportion of absentees from school was 15 per cent. on Dec. 23rd, compared with the ordinary figure of 5·5, the corresponding figures for teachers being 5 and 1·5 per cent. respectively. Except in one large general hospital, where the proportion off duty reached 10 per cent., the hospital staffs did not suffer as much as the outside population. The prevailing

Poor-law Children

Mr. LOVAT-FRASER asked the Minister of Health if he was aware that in April, 1931, there were over 100 children in the workhouses of Dorsetshire contrary to the regulations, and that there were still over 100 children there; and if he proposed to take any steps in the matter.—Sir E. HILTON YOUNG replied: The numbers stated are not in accordance with the information I possess. The return relating to Jan. 1st last is not yet available, but on Jan. 1st, 1931, the number was 68, and on Jan. 1st, 1932, was 44. Since then I have sanctioned the erection of two additional cottage homes to accommodate 30 children.

Radium Conference Report

Mr. LECKIE asked the Minister of Health what action he proposed to take to carry out the recommendation of the Radium Conference, whose report was published in January.—Sir E. HILTON YOUNG replied: The conference on massive radiation to which the hon. Member refers was not summoned by me, but by the president of the Royal College of Physicians and the president of the Royal College of Surgeons. It may, I think, safely be anticipated that the report of the conference will receive the attention of the Radium Commission and other bodies directly concerned with the therapeutic application of radium.

Public Health Law Consolidation

Mr. LIDDALL asked the Minister of Health when the Committee on Local Government and Public Health Law Consolidation, appointed Dec. 8th, 1930, would issue the promised interim report covering the consolidation of the law of local government.—Sir E. HILTON YOUNG replied: I understand that the committee hope to complete their interim report dealing with the law of local government not later than the end of the present month.

Female Vagrancy

Sir GIFFORD FOX asked the Minister of Health whether his returns from the provinces showed any increase in or any appreciable numbers of women or girl tramps.—Sir E. HILTON YOUNG replied: Such information as is available does not suggest that there has been any considerable increase in the number of women and girl casuals. They do not ordinarily account for more than 5 per cent. of the total number of tramps.

MONDAY, FEB. 13TH

All-India Medical Council Bill

Mr. JOHN asked the Secretary of State for India whether he had considered the resolution passed at the All-India Medical Council, held at Lucknow, and sent to him, requesting the Government not to proceed with the All-India Medical Council Bill until such time as the Federal legislature was duly constituted; and what action he proposed to take in the matter.—Sir S. HOARE replied: The resolution referred to by the hon. Member has not reached me.

TUESDAY, FEB. 14TH

Mental Condition of Accused Persons

Mr. MCGOVERN asked the Secretary of State for Scotland what were the reasons for dropping the prosecution of Colonel Frederick Watkins, Blair Atholl, Lenzie, who was arrested and charged with shoplifting from Messrs. Marks and Spencers' stores on Dec. 22nd, 1932.—Mr. NORMAND (Solicitor General for Scotland) replied: This officer was charged with shoplifting from the stores of Messrs. F. W. Woolworth, Ltd., Glasgow. The Lord Advocate ordered no further proceedings, in view of the accused's previous medical history, and a medical specialist's report as to his mental condition. The accused is now under treatment in a home.

Mr. MCGOVERN: Is it not a fact that the Lord Advocate instructed the Edinburgh agents of this man to secure such a certificate, and that on the production of such certificate he would order that no further steps should be taken in this case; and is this man now a paymaster in the Regular Army in the Scottish Command in Edinburgh?

Mr. NORMAND: With regard to the first part of the question, I think the position is that the only connexion that the Lord Advocate had with the doctor who gave the certificate was that the doctor was the usual doctor employed by the Crown in cases where the mental condition of an accused person is in question. I am unable to answer the second part of the question.

Mr. MCGOVERN asked if medical evidence for and against as to the mental condition of this man should have been produced in court to decide whether he was mentally unstable or not.

Mr. NORMAN said that the course taken in this case was perfectly normal. In minor cases of this kind it was within the discretion of the prosecutor to have an investigation made for himself and take what action seemed proper to him.

Mr. MCGOVERN asked the Secretary for Scotland the reasons for the failure to proceed with the prosecution of Mrs. Mary McBeth or Semple, of Newlands, Glasgow, who was charged with shoplifting from Messrs. Marks and Spencers, Ltd., on Dec. 8th, 1932; whether he was aware that she had been charged on two previous occasions, on Jan. 19th, 1914, from Messrs. Simpson and Sons' Stores, Jamaica-street, Glasgow, and in November, 1924; and what the sentence was on each occasion.—Mr. NORMAN replied: It is not the fact that the prosecution against the woman referred to did not proceed to trial. The case was in fact tried on Feb. 1st, 1933, before the Stipendiary Magistrate, Glasgow, who, in view of medical evidence upon the accused's mental condition, found her not guilty. She had previously been charged with similar offences. In February, 1914, she was put on probation for six months, and in November, 1924, she was ordered to find caution for her good behaviour, which was done.

Mr. MCGOVERN asked whether medical certificates were produced on behalf of this woman and the Stipendiary Magistrate found himself in a great difficulty in not accepting what had previously been accepted by the Lord Advocate; was this woman charged in 1914 with stealing an article valued at £43; did she plead that there was anything wrong with her mind, and did the police doctor certify her as being absolutely sane?

Mr. NORMAND: The Stipendiary Magistrate heard evidence and did not act upon any certificate. I am not able to answer the question as to the value of the article which she was accused of stealing in 1914. I do not think that on either of the previous occasions she pleaded insanity or mental weakness in connexion with the charges.

Mr. MAXTON: May we advise our constituents that under the present judicial regime in Scotland a medical certificate will always be taken as an excuse for theft?

Mr. NORMAND: No, Sir.

Mr. MCGOVERN gave notice that he would raise the matter again when the Lord Advocate returned, because, he said, there was a feeling in Scotland that the law was being "rigged" in this case.

Medical and Dental Services Report

Mr. LIDDALL asked the Secretary to the Treasury when the Committee on Medical and Dental Branches of the Defence Services, appointed May 19th, 1931, would present its report.—Mr. HOARE-BELISHA replied: I am informed by the chairman that this inquiry has now reached the stage at which the Committee may shortly consider a report.

GUERNSEY MENTAL HOSPITALS.—Dr. T. Saxty Good medical superintendent of Oxford County and City Mental Hospital, has reported upon the condition of the mental hospitals in the island of Guernsey. He describes the female institution, an annexe of the St. Peter Port Hospital, as gloomy and prison-like in appearance—it was, in fact, formerly an old house of correction. The room used as an infirmary is dark, dismal, and quite unsuitable, and the single rooms are "dark, cold, badly ventilated and lighted." There is no form of central heating, "the general effect is extremely depressing," and structurally the building is inadequate and unsuitable. None of the nurses are fully trained in mental nursing; there is too much solitary confinement; the patients are unoccupied and unclassified, and there are no amusements. In the male hospital, an annexe of the country hospital, the single rooms are lighted by small skylights, and the floors are of concrete. "The whole building has a prison-like appearance, and is quite unsuitable for treating mental illness." In the mental and general hospitals, the workhouses, and schools Dr. Good found a serious proportion of mental defectives. There is no out-patient department at any hospital in the island. Dr. Good recommends the appointment of a medical man experienced in the treatment of mental disorder to organise the main and auxiliary services for dealing with such disorders. He thinks that money spent upon improving the existing buildings would be largely wasted, and suggests a new building in the grounds of the country hospital, and the collection there of the whole of the hospital services, leaving only a small unit in St. Peter Port to deal with accidents. The asylums committee has recommended the States to appoint "for at least one year" a medical officer as proposed by Dr. Good.

Royal College of Physicians of Edinburgh

At a quarterly meeting of the College, held on Feb. 7th, with Dr. Robert Thin, the president, in the chair, Dr. Ion Simson Hall (Edinburgh) was introduced and took his seat as a Fellow of the College. Dr. Robert Lees (Edinburgh), Dr. Charles Mackay Seward (Exeter), and Dr. Ian George Wilson Hill (Edinburgh) were elected to the Fellowship.

London School of Hygiene and Tropical Medicine

The next series of eight lectures and demonstrations on tropical hygiene, which are intended for men and women outside the medical profession proceeding to the tropics, will be given by Lieut.-Colonel G. E. F. Stammers from March 6th to 15th. The synopsis may be had from the secretary of the school, Keppel-street, Gower-street, W.C.1.

Royal Statistical Society

A meeting of this society will be held on Tuesday, Feb. 21st, at 5.15 P.M., in the hall of the Royal Society of Arts, John-street, Adelphi, London, W.C., when Mr. A. Bradford Hill, D.Sc., will read a paper on Some Aspects of the Mortality from Whooping-cough.

Medico-Legal Society

An ordinary meeting of this society will be held at 11, Chandos-street, Cavendish-square, W. 1, on Thursday, Feb. 23rd, at 8.30 P.M., when a paper will be read by Dr. S. C. Dyke on The Human Blood-Groups, followed by a discussion which should attract considerable attention, seeing the significance which now has to be attached to findings along this line. Members may introduce guests to the meeting upon production of the member's private card.

Central Association for Mental Welfare

The association has again rented the Green Lady Hostel, Littlehampton, for the use of local authorities, institutions, and others as a holiday home for mental defectives. The hostel will be available for two periods: from March 31st to May 26th, and from Sept. 1st to Oct. 27th. Applications for the first period should be sent not later than Feb. 27th to the secretary of the association, 24, Buckingham Palace-road, London, S.W.1, from whom further information may be had.

Fellowship of Medicine and Post-Graduate Medical Association

The next lecture in the series on practical problems in medicine and surgery will take place on Tuesday, March 28th, at 11, Chandos-street, Cavendish-square, London, W., at 4 P.M., when Mr. J. P. Lockhart-Mummery will lecture on the Causes and Treatment of Incontinent Anus. There will be a week-end course of practical demonstrations in general medicine and surgery at the New General Hospital, Southend-on-Sea, on Saturday, March 4th, and Sunday, March 5th. The course will include ward rounds, lecture-demonstrations, demonstration of X ray films, and a discussion on Infection by the Staphylococcus. Further particulars may be had from the secretary of the Fellowship at 1, Wimpole-street, London, W.1.

Treatment of Industrial Rheumatism

In a lecture given at the Royal Institute of Public Health on Feb. 8th, Dr. W. S. C. Copeman said that chronic rheumatism costs this country £17,000,000 per annum, yet the only *official* methods of combating it at present are by the payment of weekly allowances whilst the patient is not at work, and by analgesic drugs. Most of the schemes put forward for dealing with it entailed the *de*centralisation of treatment centres. Dr. Copeman felt this method to be wasteful and likely to be inefficient. In any practical scheme diagnosis must in the first instance be in the hands of the insurance practitioner, or failing this, by "rheumatic advisory centres," which may be run apart from treatment clinics in all thickly populated and industrial parts of towns. If special (physical) treatment should be required, the patients are referred from these centres to a central clinic. Treatment at these "town clinics" must be supervised by experts, and must be given after working hours. If treatment in bed is required, or more than two months' treatment, cases should be sent on to a spa or provincial general hospital. Afterwards they must be referred directly back to their own doctor and "followed up" from the centre.

Sir Edward Stewart, M.D., the chairman, said that the British Red Cross Society were considering the adoption of the scheme outlined by Dr. Copeman, since it appeared necessary that any scheme which might later be put into operation in this country should be on a national scale. If the problem were left in the hands of local authorities there would be overlapping between the various areas.

WE regret to announce the death on Feb. 12th, in his 70th year, of Dr. T. B. Hyslop, sometime medical superintendent of the Bethlem Royal Hospital.

Hunterian Society

Sir Crisp English will deliver the Hunterian oration at the Mansion House, London, E.C., at 9 P.M., on Monday, Feb. 27th. The subject of the oration will be the Language of Facts.

Malmesbury Hospital

Last year 353 in-patients were admitted to the Malmesbury and District Hospital and Maternity Home, 40 of whom were maternity cases. The average stay was 21·5 days, and the average weekly cost of maintenance £2 11*s.* 2*d.*

Birmingham Hospitals Contributory Association

The income last year was £272,000, an increase, notwithstanding trade depression, of £70,000. In the five years since the Hospital Saturday Fund was linked with the Contributory Association rather more than a million has been raised. The contributors number 445,000.

Liverpool's Hospital "Flying Squad"

The Merseyside Hospitals' Council is endeavouring to bring up to 250 the "flying squad" of motorists who volunteer to take blood donors to hospital and relatives to patients dangerously ill during the hours of the night when public transport is not available. The corps already numbers 180, many of whom are young women, but the volunteers' duties are increasing so rapidly that a considerable augmentation is necessary. Each member takes one month's duty at a time.

Anti-cancer Serum

The central public health committee of the London County Council has granted permission to Dr. T. Lumsden, director of the cancer research laboratory at the London Hospital, to arrange for the treatment with anti-cancer serum of patients in the Council's hospital who may assent to such treatment, provided the work is carried on in each case under the supervision and control of the medical superintendent of the hospital concerned.

Volunteer Nurse Patrols

A corps of women volunteer nurses is being trained at Glasgow to patrol the main roads in the west of Scotland to give aid to persons injured in accidents. The nurses, who will become a unit of the St. George's Ambulance Association, will tend the injured on their way to hospital and supplement the ambulance corps in first-aid service; they will wear a uniform similar to that of the Voluntary Aid Detachment. It is hoped eventually that the service will cover the whole of Scotland.

The Institute of Medical Psychology

A post-graduate course in psychotherapeutic theory and method has been arranged by this institute. The work of the course is divided into two groups (each limited to six in number); members of the first group are asked to give three hours twice a week, while members of the secondary group are expected to devote 12 hours weekly to the work of the course and to attend on three days. The introductory part of the work of the first group may be attended by medical practitioners as an isolated course of lectures, which will be given at 4.45 P.M. and 5.45 P.M. on Fridays and Tuesdays from March 10th to April 11th. Applications and inquiries should be sent to the honorary lecture secretary, at the institute, 6, Torrington-place, London, W.C.1.

Aberdeen Hospitals

Last year was marked by a further extension of the work of the radium department of Aberdeen Royal Infirmary, 557 treatments by radium and radon having been given as compared with 430 in 1931. In consequence of the insufficient supply of radium a further loan of 200 mg. was obtained and converted into radon, as it had been found that the treatment of suitable cases by this agency was the more economical. There were 6780 in-patients, an increase of over 500, and 26,521 out-patients, an increase of nearly 1000. The average cost per occupied bed was £88 10*s.* 10*d.* as compared with £93 0*s.* 1*d.* in 1931; the average cost of each in-patient was £4 17*s.*, a fall of 11*s.* 7*d.* Motor accident cases numbered 143; they cost £800, in respect of which £203 has, so far, been recovered. The Aberdeen Royal Mental Hospital is to be reconstructed and enlarged at a cost of £100,000, instead of £70,000 as originally contemplated. Since only £25,000 is available, the remaining £75,000 will have to be borrowed on the basis of repayment over a period of 30 years.

type of illness was of sharp onset and short duration, ushered in with shivering and fever followed by headache and joint pains, and lasting two or three days. Often the acute symptoms were followed by persistent cough and debility. The gastric type was not in evidence. The outbreak apparently caused an increased incidence of acute lobar pneumonia at a time when this does not usually prevail to anything like the same extent. Of 49 cases of pneumonia (30 lobar, 10 broncho-pneumonia, and 9 "influenzal") admitted to one of the hospital wards between Dec. 15th and Jan. 17th, 17 proved fatal, giving a mortality-rate of 35 per cent. against a pre-influenzal rate of about 15 per cent. in the same ward. Dr. Ian Christie, at Knightswood Fever Hospital, found 53 per cent. of type II. infections compared with an average of 36 per cent. for the city during the past three years.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED FEB. 4TH, 1933

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 18 (last week 14); scarlet fever, 1757; diphtheria, 678; enteric fever, 9; acute pneumonia (primary or influenzal), 5151 (last three weeks 3456, 3781, and 4821); puerperal fever, 37; puerperal pyrexia, 154; cerebro-spinal fever, 90; acute poliomyelitis, 11; acute polio-encephalitis, 1; encephalitis lethargica, 15; dysentery, 24; ophthalmia neonatorum, 91. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Feb. 7th–8th was as follows: Small-pox, 56 under treatment, 4 under observation (last week 44 and 5 respectively); scarlet fever, 1611; diphtheria, 1597; enteric fever, 8; measles, 271; whooping-cough, 670; puerperal fever, 23 (plus 11 babies); encephalitis lethargica, 230; poliomyelitis, 1; other diseases, 321. At St. Margaret's Hospital there were 15 babies (plus 9 mothers) with ophthalmia neonatorum.

The notifications of cerebro-spinal fever have been rising steadily for the last few weeks, the figures being 38, 47, 61, 66, and 90. They are distributed this week among 23 counties and 64 sanitary authorities, the largest numbers being in *Durham* 6 (Sunderland 3, West Hartlepool 1, Easington R.D. 2), *Lancaster* 8 (Liverpool 2, Manchester 2, St. Helens 2, Wigan 1, Rawtenstall 1), *London* 13 (Bethnal Green 1, Hackney 1, Hammersmith 1, Hampstead 1, Kensington 1, Poplar 1, St. Pancras 1, Shoreditch 1, Southwark 1, Stepney 2, Westminster 1, Woolwich 1), *Yorks West Riding* 26 (Barnsley 1, Bradford 2, Doncaster 3, Leeds 3, Sheffield 7, Adwick-le-Street U.D. 1, Conisbrough U.D. 2, Normanton U.D. 2, Royston U.D. 1, Shipley U.D. 1, Stocks Bridge U.D. 1, Doncaster R.D. 1, Rotherham R.D. 1).

Deaths.—In 118 great towns, including London, there was no death from small-pox or enteric fever, 19 (0) from measles, 5 (0) from scarlet fever, 81 (14) from whooping-cough, 40 (4) from diphtheria, 42 (10) from diarrhœa and enteritis under 2 years, and 1911 (368) from influenza. The figures in parentheses are those for London itself.

The towns which reported the largest number of deaths from influenza were as follows, last week's figures being given in parentheses: Manchester 87 (100), Sheffield 63 (85), Bristol 62 (65), Hull 49 (27), Liverpool 49 (49), Bradford 38 (18), West Ham 36 (24), Cardiff 36 (36), Leicester 35 (37), Stoke-on-Trent 34 (72), Leeds 31 (56), Oldham 29 (22), Salford 29 (20), Norwich 26 (17), Cambridge 25 (12), Swansea 25 (28), Nottingham 23 (37), Wigan 22 (20), Bolton 21 (43), Preston 21 (12), Birmingham 21 (24), Plymouth 21 (6).

Six fatal cases of measles were reported from Liverpool, 2 from Hull. Deaths from whooping-cough were widely distributed, 6 being reported from St. Helens, 5 from West Ham, 4 from Darlington; each 3 from Leeds, Sheffield, and Stoke-on-Trent. Diphtheria claimed 5 victims at Liverpool.

The number of stillbirths notified during the week was 273 (corresponding to a rate of 42 per 1000 total births), including 35 in London.

MEDICAL NEWS

University of Cambridge

On Feb. 11th the following degrees were conferred:—

M.D.—*A. D. Charters, J. R. Armstrong, S. W. Savage, and J. L. Newman.
M.B. and B.Chir.—R. S. C. McDade and S. S. Jaikaran.
M.B.—G. H. A. Graetz.
B.Chir.—*R. L. Osmaston and K. M. A. Perry.
* by proxy.

Royal College of Surgeons of England

At a meeting of the council held on Feb. 9th, with Sir Holburt Waring, the president, in the chair, diplomas of membership were conferred on 131 of the 134 candidates whose names were given in our issue of Feb. 4th as recipients of the L.R.C.P. (with the exception of B. T. W. Harvey, H. J. M. Robinson, and H. G. Ungley).

Resolutions of condolence were passed on the death of Sir Percy Sargent, vice-president of the College, and of Sir Frederic Hallett, formerly secretary of the examining board in England and the Imperial Cancer Research Fund. Mr. G. E. Gask, professor of surgery in the University of London, was elected a vice-president in place of Sir Percy Sargent.

The president reported the appointment of Mr. A. H. Burgess, professor of clinical surgery in the University of Manchester, as Bradshaw lecturer, and of Mr. L. W. G. Malcolm, conservator of the Wellcome Historical Medical Museum as Thomas Vicary lecturer for the ensuing year. Mr. Victor Bonney was re-elected the representative of the College on the Central Midwives Board, and Sir Cuthbert Wallace was elected a member of the executive committee of the Imperial Cancer Research Fund.

The president reported that an election of five Fellows into the council would take place on Thursday, July 6th, at 11 A.M., in the vacancies occasioned by the retirement in rotation of Lord Moynihan, Sir John Lynn-Thomas, Mr. Burgess, and Mr. V. Warren Low, and by the death of Sir Percy Sargent; that notice of the election would be given to the Fellows by advertisement and by circular on March 10th; that March 20th would be the last day for the nomination of candidates; and that a voting paper would be sent on April 4th to every Fellow whose address was registered at the College.

University of London

The University Extension and Tutorial Classes Council, in coöperation with the Central Association for Mental Welfare, has arranged a course, from Monday, May 8th, to Saturday, May 20th, on mental deficiency; it is specially designed for medical practitioners who are definitely concerned with the care of subnormal or abnormal persons. The course is divided into two parts, and part I. (May 8th to May 13th) may be taken separately if desired; part II. (May 13th to May 20th) may only be taken separately by those who have in previous years attended part I. The lectures will be given daily from 10 A.M. to 12.30 P.M. at the University, South Kensington, and the lecturers will include Dr. A. F. Tredgold, Dr. F. C. Shrubsall, Prof. Cyril Burt, Dr. William Moodie, and Dr. Emanuel Miller. Clinical work will also be arranged for each student. Further particulars may be had from Miss Evelyn Fox at the University Extension Department, University of London, South Kensington, S.W.7, to whom applications should be sent before April 18th.

British Post-Graduate Medical School

Sir Austen Chamberlain has accepted nomination by the Minister of Health to be a governor of this school, and the governors have appointed him chairman of the governing body in succession to Lord Chelmsford, who resigned on his election to be warden of All Souls College, Oxford.

Presentation to a Medical Man

Upon his retirement from the position of senior honorary surgeon of Saffron Walden Hospital, with which he has been connected for more than 40 years, Dr. H. C. Bartlett has been presented with a silver salver. In acknowledging the gift Dr. Bartlett said he believed that, with one exception, he was the last medical student to be apprenticed. The exception was Dr. Walter Gifford Nash, who has recently retired from the senior surgeoncy of Bedford Hospital. He said that his work "was to dispense, roll bandages, take out teeth, walk round the wards, visit the sick, answer the night bell, take down the shutters in the morning and put them up at night, go to church twice on Sunday, wear a tail coat and bowler hat, and to do everything possible to help the man with whom he was apprenticed."

NOTES, COMMENTS, AND ABSTRACTS

TESTS FOR MOTORISTS

It is estimated that in the 14 years since the war 1,800,000 men, women, and children have been injured or killed on the roads of Great Britain. The treatment of the injured is believed to cost our hospitals nearly £300,000 a year. It is said that over 98 per cent. of these traffic accidents are avoidable. What would the public think if an epidemic took a similar toll of life and if it were shown that a similarly high proportion of cases were preventable? Unable to share the general attitude of fatalism in these matters, the Pedestrians' Association comes forward with a pamphlet explaining, Why Britain should have Motor Driving Tests. The Royal Commission, on whose report the Road Traffic Act of 1930 was based, decided against tests. The Act itself requires no tests of intending motorists; it merely requires applicants for licences to make a declaration. The prescribed form of declaration undoubtedly eliminates a proportion of drivers who are physically unfit or disabled. Would not a proper test eliminate a larger number? Would it not therefore make the roads safer—a result which the Road Traffic Act has failed to achieve?

There are four arguments against tests. The beginner, it is said, is not a dangerous driver, because he is too frightened to take risks. The reckless driver, who is the chief danger, is not eliminated by tests. Tests if perfunctory are valueless; if thorough they are impracticable. The cost of tests would far outweigh the value. The Pedestrians' Association, in controverting these four arguments, hints that a fifth has influence with the motor trade—namely, a fear that if tests mean fewer drivers, there will be some decline of sales. Such an argument could hardly be seriously stated. Bad as trade is, it has no right to a stimulus which will put a few more people into the cemeteries and hospitals as well as into the factories. The Pedestrians' Association tells us that Great Britain has the highest density of motor vehicles per mile of road of all the countries in the world, and that therefore the highest standard of driving skill is required. It states that we have the worst accident record in the world (if account be taken of the number of cars and population), and that ours is the only civilised country (with the exception of Belgium) which has no tests. This last statement perhaps needs some small qualification. Many towns in England have obtained powers by Local Act for imposing "such reasonable tests as they may think fit" upon persons seeking a licence to drive a hackney carriage in the district. If this is desirable in the case of taxi-drivers, it may also be desirable for lorry-drivers, private motorists, and motor-cyclists. But if the enactment of compulsory tests for all drivers is not practical politics, possibly a beginning can be made with some voluntary system. It should not be beyond the powers of the various motoring associations to devise some criteria of physical fitness and technical competence and to apply them to such members as volunteer to be examined. Would not insurance companies be disposed to offer better terms to examinees who emerged with a first-class diploma? The Pedestrians' Association pamphlet mentions some interesting details of psychological tests evolved by the National Institute of Industrial Psychology.

Tests of course are not put forward as a panacea, but as an essential part of a comprehensive policy to lessen the avoidable accidents which multiply death and suffering. Controversy between pedestrians as such and motorists as such is misleading. All motorists are sometimes pedestrians and many pedestrians are sometimes motorists. But the Pedestrians' Association does well to draw attention to any possible remedy for the appalling loss of life on the roads.

QUININE AND ITS SUCCESSORS

To the Editor of THE LANCET

SIR,—May we correct one or two points in your leading article of Jan. 28th (p. 206) from which misapprehension seems to have arisen. When it is stated that nine-tenths of the world's quinine is made in Java and Sumatra, and one-tenth in India, the reference is obviously to the amount of cinchona bark grown. It is true that the quinine factory at Bandoeng, Java, manufactures large quantities of the product, but most of that sold to-day is made in Holland, Great Britain, Germany, France, Switzerland, and the U.S.A. The world consumption of quinine being somewhere in the region of 500,000 kg. in 1931, it is difficult to see how the figure of 60,000 kg. for the imports of all countries was obtained.

We are, Sir, yours faithfully,

HOWARDS AND SONS, LTD.
(H. LLOYD HOWARD, Director.)

Ilford, Jan. 31st, 1933.

*** The League of Nations pamphlet deals with "quinine or secondary alkaloids of cinchona," since the information which has been received has not ordinarily distinguished between the two. The difficulties encountered in its compilation are described thus: "The figure for imports seems to be accurately known in the case of quinine imported by Governments themselves; but the amount of quinine imported commercially is much less certain, because some of it may be reimported, or some of the goods declared as quinine are not quinine. In these cases the figure for imports is exaggerated." The figure of 60,000 kg. quoted in the article refers to quinine imported by Governments. The table from which it is taken gives, however, two figures, "total" and "corrected total." Under "corrected total" is apparently given the average amount imported over a period, usually over ten years; it is stated to be 59,809 kg. Under "total" appears the quantity imported during the last year for which figures have been received; in 1931 it reached 156,280 kg. The corrected total was used in our leading article.—ED. L.

DETERIORATION IN THE TROPICS

OUR last issue contained an annotation and a report of a discussion on mental and physical deterioration of Europeans in the tropics. Dr. D. V. Latham, in the January issue of the *East African Medical Journal*, describes the disadvantages of living, not only in the tropics, but at a high altitude. European residents in the East African highlands live at levels from 4500 feet upwards. With increasing altitude there is a falling incidence of tropical diseases, but psychological derangements, cardiovascular disease, and lung affections become commoner. The region most densely populated by Europeans lies actually on the Equator, and Dr. Latham believes that the combination of altitude and tropical sun is an important factor in modifying physiology and pathology. Mountain sickness may arise if the energy output is excessive, and the prognosis in pneumonia is distinctly less favourable than at lower altitudes because the anoxæmia induced is more marked. The effect on the mental faculties of life at high altitudes, he finds, is comparable to that of alcohol: some people become morose, others quarrelsome; cautious men may become reckless and reliable men irresponsible. He infers that the mind suffers more readily from fatigue in a reduced oxygen pressure, and irritability and lack of self-control appear more easily. Children suffer physically from a diet sterilised to excess, and morally from the devotion of their African attendants. Dr. Latham concludes by saying that "to my mind it is doubtful if a community will ever be able to overcome the added trials of the sun and altitude in a country where

Pay-beds at the Cancer Hospital, Fulham

The governors of this free hospital recently decided to introduce a Bill in Parliament to enable them to make charges to patients desirous of special accommodation.

Cardiff Royal Infirmary

Last year 5654 in-patients and 36,868 out-patients were treated at this hospital at a total cost of £61,694, an average of £9 1*s.* per in-patient and 5*s.* 10*d.* per out-patient. The average cost per occupied bed was £140 4*s.* During the year £3778 was collected in sixpences.

Sussex Provident Scheme

Under this scheme during 1932 over £20,000 was paid to hospitals and cooperating institutions and organisations which only received £332 in 1021. The scheme was started in 1920 and, as these figures show, has been very successful; during the 12 years £110,627 have been contributed. Last year the Royal Sussex County Hospital received £7180 for services rendered to members; the Royal Alexandra Hospital for Sick Children, £2108; New Sussex Hospital, £1939; Hove Hospital, £1102; Haywards Heath Hospital, £1051; and Brighton Corporation, £1030.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Feb. 21st.—5.30 P.M., General Meeting of Fellows. 8.30 P.M., Patholo[illegible] Bland-Sutton Institute of [illegible] [illegible]strations [illegible]oids in Pulmonary Phagocytes. [illegible] Incidence and Total Incidence of Cancer in England and Holland. Prof. J. McIntosh: An Unusual Source of Tetanus Infection. Mr. J. W. Cook and Prof. E. C. Dodds: Biological Activity of Synthetic Org[illegible] to Œstrus. D[illegible] Observations [illegible] Mr. D. H. P[illegible] Portal Vein. [illegible] mental Hypertension. Dr. L. W. Proger: Apparatus for Cinema Microphotography. Mr. C. J. Britton: Experimental Reticulocytosis and Punctate Basophilia. Mr. E. G. Muir: *The Pathology of Prostatic Enlargement.* Dr. C. C. Bryson: The Histological Grading of Intrabuccal Carcinoma. Dr. A. C. Counsell: Pathological Specimens.

Wednesday.—5 P.M., Comparative Medicine and Therapeutics and Pharmacology. Discussion: Plant Poisoning in Man and Animals. Speakers: Mr. W. Horner Andrews, Sir William Willcox, Mr. J. A. Nicholson, Dr. G. Clough, and Dr. P. Haas.

Thursday.—8.30 P.M., Urology. Paper. Mr. J. Swift Joly: Bilateral Renal Calculi.

Friday.—5.30 P.M., Disease in Children. (Cases at 4.30 P.M.). *Cases will be shown.* 8 P.M., *Epidemiology and State Medicine.* Paper. Dr. G. C. M. M'Gonigle (Stockton-on-Tees): Some Results of the Removal of a Slum Population to Modern Dwellings.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

Monday, Feb. 20th.—9 P.M., Mr. V. Z. Cope: Pathology of Acute Abdominal Disease (1st Lettsomian lecture).

CHELSEA CLINICAL SOCIETY.

Tuesday, Feb. 21st.—8.30 P.M. (at the Hotel Rembrandt, Thurloe-place, S.W.), Mr. Harold G. Taylor will open a discussion on Contraception. (Preceded by dinner at 7.30 P.M.)

MEDICO-LEGAL SOCIETY.

Thursday, Feb. 23rd.—8.30 P.M. (at 11, Chandos-street, Cavendish-square, W.), Dr. S. C. Dyke: The Human Blood Groups. To be followed by a Discussion.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY.

Wednesday, Feb. 22nd.—5 P.M. (at 49, Leicester-square, W.C.), Dr. H. Gordon: Arsenical Jaundice.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

Wednesday, Feb. 22nd.—2.30 P.M. (at 11, Chandos-street, [illegible] D. R. MacCalman: [illegible] Application.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL *COLLEGE OF PHYSICIANS, Pall Mall East, S.W.*

Thursday, Feb. 23rd.—5 P.M., Dr. R. Cruickshank: Pneumococcal Infections (1st Milroy lecture).

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn-fields, W.C.

Monday, Feb. 20th.—5 P.M., Mr. Laurence O'Shaughnessy: Thoracic Surgery. (Hunterian lecture.)

Wednesday.—5 P.M., Mr. G. A. Mason: Surgical Significance of the Vitelline Duct. (Hunterian lecture.)

Friday.—5 P.M., Mr. E. R. Flint: Pre-operative Procedure. (Hunterian lecture.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole street, W.

Monday, Feb. 20th to Saturday, Feb. 25th.—Royal Free Hospital, Gray's Inn-road. Fri., Antenatal demonstration by Dame Louise McIlroy at 5 P.M.—St. John's Hospital, Leicester-square, W.C. Post-graduate Course in Dermatology. Clinical instruction daily at 2 P.M. and 6 P.M. Lectures at 5 P.M. on Tues. and Thurs.—National Temperance Hospital, Hampstead-road, N.W. Evening M.R.C.P. Course, Mondays and Fridays at 8 P.M.—Prince of Wales's Hospital, Tottenham, N. Post-graduate Course in Medicine, Surgery and the Specialties. All day.—Hospital for Consumption, Brompton, S.W. Post-graduate Course in Practical Pathology dealing with Laboratory Methods and the Interpretation of Results, Mons. and Thurs., 11.30 A.M. to 1 P.M.—Fellowship of Medicine, 1, Wimpole-street, W. The Interpretation of Pyelograms. Mon., Wed., and Fri., 8 P.M.—*Courses open only to Members and Associates of the Fellowship of Medicine.*

ST. MARK'S HOSPITAL, City-road, E.C.

Thursday, Feb. 23rd.—4 P.M., Dr. J. K. Hasler: Anæsthesia in Rectal Surgery.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

Friday, Feb. 24th.—4 P.M., Mr. A. Lowndes Yates: Diseases of the Ear which lead to Deafness.

ST. PETER'S HOSPITAL FOR STONE, Henrietta-street, W.C.

Wednesday, Feb. 22nd.—3 P.M., Mr. J. G. Sandrey. Congenital Abnormalities of the Upper Lip.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

Thursday, Feb. 23rd.—9 P.M., Dr. E. ff. Creed: Recent Work on Some Blood Diseases.

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W.

Thursday, Feb. 23rd.—3 P.M., Dr. Wilfred Harris will demonstrate.

NATIONAL HOSPITAL, Queen-square, W.C.

Monday, Feb. 20th.—2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Hinds Howell: Vascular Disease of the Nervous System.

Tuesday.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Grainger Stewart: Spinal Tumours and Syringomyelia.

Wednesday.—2 P.M., Dr. Martin: Out-patient Clinic 3.30 P.M., Dr. James Collier: Clinical Demonstration

Thursday.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Walshe: Cerebral Tumours.

Friday.—2 P.M., Dr. Adie: Out-patient Clinic. 3 30 P.M., Dr. James Collier: Virus Diseases of the Nervous System.

LONDON JEWISH HOSPITAL, Stepney Green, E.

Thursday, Feb. 23rd.—4 P.M., Dr. Geoffrey Konstam: Anæmias Due to Defective Maturation of Red Blood Cells.

UNIVERSITY COLLEGE, Gower-street, W.C.

Wednesday, Feb. 22nd.—4.15 P.M., Dr. J. S. Prendergast: Renaissance Medicine.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

Tuesday, Feb. 21st.—5 P.M., Dr. J. A. Drake: Leprosy.

Thursday.—5 P.M., Dr. A. Burrows: Leukæmia Cutis, Mycosis Fungoides.

ROYAL INSTITUTE OF PUBLIC HEALTH.

Wednesday, Feb. 22nd.—11.30 A.M., Demonstration at the British Red Cross Society Clinic for Rheumatic Diseases, Peto-place, Regent's Park, N.W.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

Wednesday, Feb. 22nd.—4 P.M., Mr. E. Lindsay: Painful Feet.

CHADWICK TRUST.

Tuesday, Feb. 21st.—5 P.M. (at the Royal Society of Tropical Medicine, 26, Portland-place, W.), Dr. Matthew B. Ray: The Hippocratic Tradition.

MANCHESTER ROYAL INFIRMARY.

Tuesday, Feb. 21st.—4.15 P.M., Dr. E. W. Twining: The Value of X Rays in Cardiac Conditions.

Friday.—4.15 P.M., Prof. F. E. Tylecote: Demonstration of Medical Cases.

ST. MARY'S HOSPITALS, Manchester.

Friday, Feb. 24th.—4.15 P.M., Post-graduate Lecture (at the Whitworth-street West Hospital), Dr. Ward: Problems of Infant Feeding.

GLASGOW POST-GRADUATE LECTURES.

Tuesday, Feb. 21st.—3.30 P.M. (in the Faculty Hall, St Vincent-street), Dr. Nora I. Wattie: Gonorrhœal Infection in Women.

Wednesday.—4.15 P.M. (at the Ear, Nose and Throat Hospital), Dr. W. S. Syme: Ear, Nose and Throat Cases.

INDEX TO "THE LANCET," VOL. II., 1932

The Index and Title-page to Vol. II., 1932, which was completed with the issue of Dec. 31st, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of The Lancet, 7, Adam-street, Adelphi, London, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

ADDRESSES AND ORIGINAL ARTICLES

PHTHISIS PULMONALIS DUE TO THE BOVINE TYPE OF TUBERCLE BACILLUS

AN ACCOUNT OF TEN NEW SCOTTISH CASES

By A. Stanley Griffith, M.D.Vict., Ph.D. Camb.
MEMBER OF THE SCIENTIFIC STAFF, MEDICAL RESEARCH COUNCIL
AND
W. T. Munro, M.D. St.And., F.R.C.P. Edin.
MEDICAL SUPERINTENDENT, GLENLOMOND SANATORIUM

Until within the last ten years the bovine tubercle bacillus, although of frequent occurrence in the non-pulmonary forms of human tuberculosis, had rarely been found in cases of ulcerative pulmonary tuberculosis (phthisis pulmonalis). At the Washington Congress in 1908 Koch, in support of his view that the bovine was less virulent for man than the human tubercle bacillus, maintained that the former type of bacillus had never been definitely demonstrated in a case of phthisis. At that date, however, relatively few cases of this form of the disease had been examined bacteriologically, and, in order to fill this gap, on the initiative of Koch, workers in many different countries undertook the typing of cultures of tubercle bacilli obtained from the sputum of phthisical persons. The results of these early investigations were reviewed by one of us in 1914 and 1932, and are here briefly summarised. Of 926 cases reported by foreign investigators three only yielded bovine bacilli, and in two of these three the bovine bacilli were shown to be associated with bacilli of human type, the latter preponderating, while in the third case (de Jong-Stuurmann) the eugonic character of the culture indicated that in this instance also tubercle bacilli of both types were coexistent in the sputum of the patient.

In Great Britain, on the other hand, Griffith,[1] working for the Royal Commission on Tuberculosis, found among 29 phthisical persons in England two adult males, aged 21 and 31 years respectively, who were expectorating tubercle bacilli of the bovine type only with the sputum. On extending his inquiries to Scotland he [2] discovered in 1913, among 73 cases—45 from Edinburgh and 28 from Glasgow and Lanark—the first Scottish case, a girl of 16½, from Edinburgh. In these three cases the bovine bacilli were obtained repeatedly from the sputum, and no other type was present. Thus it was shown beyond reasonable doubt that the bovine tubercle bacillus can cause typical phthisis pulmonalis. In 1916 Wang [3] reported, among 29 examined, another case from Edinburgh, but in this instance only one examination could be made.

No further case came to light in Great Britain until 1924, when Tulloch, Munro, Ross, and Cumming [4] reported that two of the 100 strains which they had obtained from the sputum of 100 phthisical persons in Glenlomond Sanatorium were culturally of the bovine type and virulent for rabbits, though not so highly virulent as standard bovine bacilli. Since that date cultures of tubercle bacilli have been raised by Munro from the sputum of every phthisical person admitted to Glenlomond Sanatorium, with the remarkable result that down to the middle of 1932, out of 445 cases examined, bovine tubercle bacilli were found by him in no fewer than 18 cases, in one instance associated with human bacilli. In addition Munro found bovine bacilli in the sputum of a case of phthisis from the county of Roxburgh. During the period from 1916 onwards one of us (A. S. G.) continued intermittently to investigate cases in England, and in the last two years has examined, through the courtesy of Sir Pendrill Varrier-Jones, the bacilli from every new case of phthisis admitted to Papworth Settlement. These recent English investigations have resulted in the discovery of two further cases with bovine bacilli in the sputum. Both of these patients are males and have lived in Cambridgeshire all their lives. One is a farm labourer 59 years of age, and the other is a youth of 22, the son of a farmer. The number of cases from Papworth examined during the years 1929–32 is 430, making, with those previously reported from London, a total for south-east England of 657. Of these four only, two from Brompton Hospital and two from Cambridgeshire, have yielded bovine bacilli (a full account of the second Cambridgeshire case, Case 25, has not yet been published).

Until very recently no systematic investigations of the types of tubercle bacilli in phthisis in the northern counties of England have been undertaken. This want has been supplied by the important work of Cumming and Foster,[5] of Grassington Sanatorium, Yorkshire, briefly referred to at the centenary meeting of the British Medical Association, and published more fully in the current number of the *Journal of Pathology and Bacteriology*. These authors report that during the period from January, 1931, to September, 1932, they have obtained cultures of tubercle bacilli from the sputum of 339 phthisical persons from the north of England, and that of this number 12 had bovine tubercle bacilli in the sputum. In one instance both human and bovine bacilli were obtained from the sputum, and subsequent bacteriological examination of autopsy material showed that tubercle bacilli of both types were present together in the lung and bronchial mesenteric and cervical glands. In addition to the northern cases, Cumming and Foster examined 52 cases of pulmonary tuberculosis in children under 16 years of age from south-east England and found bovine tubercle bacilli in two instances.

Since our last joint report on this subject in 1932 [6] we have continued to investigate the frequency of bovine infections in phthisis in Scotland and have widened our collecting area to include the districts served by East Fortune Sanatorium in the east of Scotland and Lochmaben Sanatorium in the south of Scotland. As in each of these institutions we have already found several cases of phthisis with bovine bacilli in the sputum, as well as additional cases from Glenlomond, we think it desirable, in view of the findings of Cumming and Foster, to publish without delay the cases we have so far confirmed, with the object of calling special attention to the number and wide distribution in this country of cases of phthisis of bovine origin. Although there is now general recognition of the fact that bovine bacilli frequently cause the non-pulmonary forms of tuberculosis in children, the possibility of these bacilli causing phthisis in adolescent or adult age after an infection in childhood has been regarded hitherto as very remote. Evidence is accumulating that, on the contrary, pulmonary phthisis due to bovine tubercle bacilli is often, perhaps usually, a late manifestation of an infection of alimentary origin acquired in childhood.

Results of Further Investigations

From June, 1931, to the end of 1932 we have obtained cultures of tubercle bacilli from the sputum communications are rapidly improving and the strain of competitive life is daily approaching that found in more temperate climates."

A DIARY OF HEALTH HINTS

Dr. Shrubsall has found a thought on health for every day of the year and embodied the result in a neat little book, one thought to a page, with the appropriate date at the top.[1] An irresistible impulse to treat it as a birthday book will probably prevent the reader from taking it seriously at the outset; this is a pity because most people find one health thought a day quite enough to assimilate, if not too much, and it is convenient and helpful to have a page of sensible information ready to our hands for daily use. Probably the advice given will rarely prove to be applicable to the special trials of each day, but provision has been made to overcome this difficulty; if one wakes convinced that he has cancer on June 24th, only to find that the day's health reminder deals with the dangers of cross-country running, he can turn at once to the index to learn that his present phobia was discussed on Jan. 7th. Sir Arthur Newsholme, in his foreword, points out that references to diet and daily physiological duties recur frequently, and that repetition of advice upon these subjects from various angles is most valuable. More than one date is given up to a note on the increase of street accidents, and Dr. Shrubsall will have performed a service to the community if he can help us to exercise discretion and good sense in our dealings with traffic. He repeatedly advises his readers, when in doubt, to refer their problems to the doctor, but believes that if his suggestions on hygiene are followed the services of a doctor will be required less, rather than more, frequently. Advice is given in straightforward language and on a pleasantly personal note; his devotion to inverted commas, however, makes reading an optical hurdle-race.

Vacancies

For further information refer to the advertisement columns

All Saints' Hospital, Austral-street, West-square, St. George's-road, S.E.—Res. H.S. At rate of £100.

Birkenhead General Hospital.—Res. Sen. H.S. At rate of £150. Also Second H.S., H.P., and Cas. O. Each at rate of £100.

Birmingham Ear and Throat Hospital.—Third H.S. At rate of £150.

Blackburn Royal Infirmary.—Fourth H.S. £250.

Brighton, Sussex Maternity and Women's Hospital.—Res. H.S. £130.

Burnley, Victoria Hospital.—H.P. At rate of £150.

Cambridge, Addenbrooke's Hospital.—Two H.S.'s and Res. Anæsthetist and Emergency Officer. Each at rate of £130.

Carlisle, Cumberland Infirmary.—H.S. At rate of £175. Also H.P., 2nd H.S., and H.S. to Spec. Depts. Each at rate of £155.

Charing Cross Hospital, W.C.—Med. Reg., Surg. Reg. Each £150. Also Registrar to Nose, Throat and Ear Dept. £100.

Chester, East Lancashire Tuberculosis Colony, Gt. Barrow.—Asst. M.O. At rate of £275.

Chester Royal Infirmary.—Hon. Anæsthetist.

Colchester, Royal Eastern Counties Institution.—Asst. in Research Dept. £300.

Coventry and Warwickshire Hospital.—Res. H.S. £125.

Denbigh, North Wales Sanatorium, Llangwyfan.—Jun. Asst. Res. M.O. £250.

Dover, Royal Victoria Hospital.—Res. M.O. £180.

Dudley, Guest Hospital.—Asst. H.S. £170.

General Lying-in Hospital, York-road, Lambeth, S.E.—Jun. Res. M.O. and Anæsthetist. At rate of £100.

[illegible] *Nose and Ear Hospital, W.*—H.S. £100.

[illegible] *Hospital.*—Res. M.O. At rate of £156.

[illegible] *pital.*—Res. M.O. and Asst. M.O. £500.

[illegible] *spital.*—Res. Asst. M.O. £400.

[illegible] *ldren, Gt. Ormond-street, W.C.*—H.P. and [illegible] te of £100.

[illegible] *and Ipswich Hospital.*—H.S. £120.

Larbert [illegible] *National Institution.*—Asst. M.O. £350.

Leeds, [illegible] —Sen. Asst. Res. M.O. £350.

Leeds [illegible] Physician.

Leigh [illegible] tes. H.S. At rate of £175.

Liverpool Stanley Hospital.—One H.P. and Two H.S.'s. Each £100.

Liverpool, Women's Hospital, Catherine-street.—H.S. At rate of £100.

London Homœopat[illegible]*nd-street and Queen-square, W.C.*– [illegible]

Manchester Babies [illegible] *Levenshulme.*—Jun. Res. M.O. At rate of [illegible]

Manchester, Crumpsall Hospital and Institution.—Med. Supt. £1200.

National Hospital for Diseases of Heart, Marylebone, N.W.—Res. M.O. At rate of £150.

National Temperance Hospital, Hampstead-road, N.W.—Hon. Asst. Physician.

Newcastle-on-Tyne, Royal Victoria Infirmary.—Jun. Surg. Reg. £150.

Northwood, Mount Vernon Hospital.—H.S. At rate of £150.

Nottingham General Hospital.—H.S. At rate of £150.

[illegible] *rthopædic Hospital and Agnes Hunt* [illegible] S. At rate of £200.

[illegible] *Borough.*—Visiting M.O. One and a half guineas per attendance.

Plymouth City General Hospital.—Med. Supt. £1000.

Preston, Sharoe-green Hospital.—Res. Asst. M.O. At rate of £150.

Prince of Wales's General Hospital, N.—Res. Sen. and Jun. H.P.'s and H.S.'s. At rate of £120 and £90 respectively.

Princess Elizabeth of York Hospital for Children, Shadwell, E.—H.S. At rate of £125.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Dist. Res. M.O. Also Asst. Res. M.O. Each at rate of £80.

Queen's Hospital for Children, Hackney-road, E.—H.P. and Cas. O. Each at rate of £100.

Royal Free Hospital, Gray's Inn-road, W.C.—Chief Clin. Asst. for Ophthalmic Dept.

St. John's Hospital for Diseases of the Skin, 49, Leicester-square, W.C.—Out-patient and In-patient Med. Regs. Each £50.

St. Mary's Hospital, W.—Director of V.D. Clinic. £400.

St. Mary's Hospital for Women and Children, Plaistow, E.—Hon. Ophth. S.

St. Thomas's Hospital.—Res. Anæsthetist.

Shrewsbury, Royal Salop Infirmary.—Res. Surg. O. £250.

[illegible] *eral Hospital.*—Res. H.S. £150.

[illegible] *VII. Hospital.*—Res. M.O. £200.

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BIRTHS

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SCORER.—On Feb. 12th, at Dellfield, Hempstead-road, Watford, the wife of Dr. Scorer, of a son.

SELBY.—On Feb. 4th, at "Midway," Neston, Wirral, Cheshire, the wife of Robert Selby, F.R.C.S.E., of a daughter.

WAKELEY.—On Jan. 31st, the wife of Cecil P. G. Wakeley, F.R.C.S., of a son.

WELLS.—On Feb. 1st, at Havenfield, Great Missenden, the wife of Dr. Arthur Q. Wells, of a son.

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CLARKE.—On Feb. 12th, at Bolingbroke-grove, S.W., Dr. Thomas Clarke (late of Pewsey, Wilts), *aged* 80.

CUSCADEN.—On Feb. [illegible] eneral Sir George Cusca[illegible] ralian Army Medical Se[illegible]

HARSANT.—On Feb. 10th, at Tower House, Clifton Down-road, Bristol, William Henry Harsant, F.R.C.S., in his 83rd year.

KUNHARDT.—On Feb. 9th, suddenly, at his home, Gorse Hill, Totland Bay, Lieut.-Colonel John Kunhardt, I.M.S. (retd.).

MILLER.—At "Elm House," Hawick, on Jan. 10th, 1933, William Miller, M.B., Ch.B., M.R.C.P. Edin., younger son of Mr. and Mrs. William Miller, 5, Park-place, Dunfermline.

PARKIN.—On Wednesday, Feb. 8th, 1933, suddenly, at The Cedars, Osborne-road, Newcastle-upon-Tyne, Alfred Parkin, M.D., F.R.C.P., F.R.C.S., beloved husband of Elizabeth Parkin. Service at Jesmond Wesleyan Church, Clayton-road, Saturday, 11.20 A.M. Interment Jesmond Old Cemetery, 12 noon.

WALL.—On Feb. 8th, at Herne Hill, Vivian Francis Wall, M.R.C.S., L.R.C.P.

WOOD.—On Feb. 6th, at Bexhill, after a long illness, George Benington Wood, M.B., C.M., of Little Coopers, Eversley, Hants, and formerly o. Sandown, I.O.W., aged 72.

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[1] Things to be Desired, or Daily Health Reminders. By W. W. Shrubsall, D.P.H. With a foreword by Sir Arthur Newsholme, K.C.B., M.D., F.R.C.P. London: John Bale, Sons and Danielsson, Ltd. 1932. Pp. 370. 5s.

ADDRESSES AND ORIGINAL ARTICLES

PHTHISIS PULMONALIS DUE TO THE BOVINE TYPE OF TUBERCLE BACILLUS

AN ACCOUNT OF TEN NEW SCOTTISH CASES

By A. Stanley Griffith, M.D.Vict., Ph.D. Camb.
MEMBER OF THE SCIENTIFIC STAFF, MEDICAL RESEARCH COUNCIL
AND
W. T. Munro, M.D. St.And., F.R.C.P. Edin.
MEDICAL SUPERINTENDENT, GLENLOMOND SANATORIUM

Until within the last ten years the bovine tubercle bacillus, although of frequent occurrence in the non-pulmonary forms of human tuberculosis, had rarely been found in cases of ulcerative pulmonary tuberculosis (phthisis pulmonalis). At the Washington Congress in 1908 Koch, in support of his view that the bovine was less virulent for man than the human tubercle bacillus, maintained that the former type of bacillus had never been definitely demonstrated in a case of phthisis. At that date, however, relatively few cases of this form of the disease had been examined bacteriologically, and, in order to fill this gap, on the initiative of Koch, workers in many different countries undertook the typing of cultures of tubercle bacilli obtained from the sputum of phthisical persons. The results of these early investigations were reviewed by one of us in 1914 and 1932, and are here briefly summarised. Of 926 cases reported by foreign investigators three only yielded bovine bacilli, and in two of these three the bovine bacilli were shown to be associated with bacilli of human type, the latter preponderating, while in the third case (de Jong-Stuurmann) the eugonic character of the culture indicated that in this instance also tubercle bacilli of both types were coexistent in the sputum of the patient.

In Great Britain, on the other hand, Griffith,[1] working for the Royal Commission on Tuberculosis, found among 29 phthisical persons in England two adult males, aged 21 and 31 years respectively, who were expectorating tubercle bacilli of the bovine type only with the sputum. On extending his inquiries to Scotland he [2] discovered in 1913, among 73 cases—45 from Edinburgh and 28 from Glasgow and Lanark—the first Scottish case, a girl of 16½, from Edinburgh. In these three cases the bovine bacilli were obtained repeatedly from the sputum, and no other type was present. Thus it was shown beyond reasonable doubt that the bovine tubercle bacillus can cause typical phthisis pulmonalis. In 1916 Wang [3] reported, among 29 examined, another case from Edinburgh, but in this instance only one examination could be made.

No further case came to light in Great Britain until 1924, when Tulloch, Munro, Ross, and Cumming [4] reported that two of the 100 strains which they had obtained from the sputum of 100 phthisical persons in Glenlomond Sanatorium were culturally of the bovine type and virulent for rabbits, though not so highly virulent as standard bovine bacilli. Since that date cultures of tubercle bacilli have been raised by Munro from the sputum of every phthisical person admitted to Glenlomond Sanatorium, with the remarkable result that down to the middle of 1932, out of 445 cases examined, bovine tubercle bacilli were found by him in no fewer than 18 cases, in one instance associated with human bacilli. In addition Munro found bovine bacilli in the sputum of a case of phthisis from the county of Roxburgh. During the period from 1916 onwards one of us (A. S. G.) continued intermittently to investigate cases in England, and in the last two years has examined, through the courtesy of Sir Pendrill Varrier-Jones, the bacilli from every new case of phthisis admitted to Papworth Settlement. These recent English investigations have resulted in the discovery of two further cases with bovine bacilli in the sputum. Both of these patients are males and have lived in Cambridgeshire all their lives. One is a farm labourer 59 years of age, and the other is a youth of 22, the son of a farmer. The number of cases from Papworth examined during the years 1929–32 is 430, making, with those previously reported from London, a total for south-east England of 657. Of these four only, two from Brompton Hospital and two from Cambridgeshire, have yielded bovine bacilli (a full account of the second Cambridgeshire case, Case 25, has not yet been published).

Until very recently no systematic investigations of the types of tubercle bacilli in phthisis in the northern counties of England have been undertaken. This want has been supplied by the important work of Cumming and Foster,[5] of Grassington Sanatorium, Yorkshire, briefly referred to at the centenary meeting of the British Medical Association, and published more fully in the current number of the *Journal of Pathology and Bacteriology*. These authors report that during the period from January, 1931, to September, 1932, they have obtained cultures of tubercle bacilli from the sputum of 339 phthisical persons from the north of England, and that of this number 12 had bovine tubercle bacilli in the sputum. In one instance both human and bovine bacilli were obtained from the sputum, and subsequent bacteriological examination of autopsy material showed that tubercle bacilli of both types were present together in the lung and bronchial mesenteric and cervical glands. In addition to the northern cases, Cumming and Foster examined 52 cases of pulmonary tuberculosis in children under 16 years of age from south-east England and found bovine tubercle bacilli in two instances.

Since our last joint report on this subject in 1932 [6] we have continued to investigate the frequency of bovine infections in phthisis in Scotland and have widened our collecting area to include the districts served by East Fortune Sanatorium in the east of Scotland and Lochmaben Sanatorium in the south of Scotland. As in each of these institutions we have already found several cases of phthisis with bovine bacilli in the sputum, as well as additional cases from Glenlomond, we think it desirable, in view of the findings of Cumming and Foster, to publish without delay the cases we have so far confirmed, with the object of calling special attention to the number and wide distribution in this country of cases of phthisis of bovine origin. Although there is now general recognition of the fact that bovine bacilli frequently cause the non-pulmonary forms of tuberculosis in children, the possibility of these bacilli causing phthisis in adolescent or adult age after an infection in childhood has been regarded hitherto as very remote. Evidence is accumulating that, on the contrary, pulmonary phthisis due to bovine tubercle bacilli is often, perhaps usually, a late manifestation of an infection of alimentary origin acquired in childhood.

Results of Further Investigations

From June, 1931, to the end of 1932 we have obtained cultures of tubercle bacilli from the sputum communications are rapidly improving and the strain of competitive life is daily approaching that found in more temperate climates."

A DIARY OF HEALTH HINTS

Dr. Shrubsall has found a thought on health for every day of the year and embodied the result in a neat little book, one thought to a page, with the appropriate date at the top.[1] An irresistible impulse to treat it as a birthday book will probably prevent the reader from taking it seriously at the outset; this is a pity because most people find one health thought a day quite enough to assimilate, if not too much, and it is convenient and helpful to have a page of sensible information ready to our hands for daily use. Probably the advice given will rarely prove to be applicable to the special trials of each day, but provision has been made to overcome this difficulty; if one wakes convinced that he has cancer on June 24th, only to find that the day's health reminder deals with the dangers of cross-country running, he can turn at once to the index to learn that his present phobia was discussed on Jan. 7th. Sir Arthur Newsholme, in his foreword, points out that references to diet and daily physiological duties recur frequently, and that repetition of advice upon these subjects from various angles is most valuable. More than one date is given up to a note on the increase of street accidents, and Dr. Shrubsall will have performed a service to the community if he can help us to exercise discretion and good sense in our dealings with traffic. He repeatedly advises his readers, when in doubt, to refer their problems to the doctor, but believes that if his suggestions on hygiene are followed the services of a doctor will be required less, rather than more, frequently. Advice is given in straightforward language and on a pleasantly personal note; his devotion to inverted commas, however, makes reading an optical hurdle-race.

Vacancies

For further information refer to the advertisement columns

All Saints' Hospital, Austral-street, West-square, St. George's-road, S.E.—Res. H.S. At rate of £100.

Birkenhead General Hospital.—Res. Sen. H.S. At rate of £150. Also Second H.S., H.P., and Cas. O. Each at rate of £100.

Birmingham Ear and Throat Hospital.—Third H.S. At rate of £150.

Blackburn Royal Infirmary.—Fourth H.S. £250.

Brighton, Sussex Maternity and Women's Hospital.—Res. H.S. £130.

Burnley, Victoria Hospital.—H.P. At rate of £150.

Cambridge, Addenbrooke's Hospital.—Two H.S.'s and Res. Anæsthetist and Emergency Officer. Each at rate of £130.

Carlisle, Cumberland Infirmary.—H.S. At rate of £175. Also H.P., 2nd H.S., and H.S. to Spec. Depts. Each at rate of £155.

Charing Cross Hospital, W.C.—Med. Reg., Surg. Reg. Each £150. Also Registrar to Nose, Throat and Ear Dept. £100.

Chester, East Lancashire Tuberculosis Colony, Gt. Barrow.—Asst. M.O. At rate of £275.

Chester Royal Infirmary.—Hon. Anæsthetist.

Colchester, Royal Eastern Counties Institution.—Asst. in Research Dept. £300.

Coventry [illegible]—Res. H.S. £125.

Denbigh, [illegible] *Llangwyfan.*—Jun. Asst. Res. [illegible]

Dover, Royal Victoria Hospital.—Res. M.O. £180.

Dudley, Guest Hospital.—Asst. H.S. £170.

General Lying-in Hospital, York-road, Lambeth, S.E.—Jun. Res. M.O. and Anæsthetist. At rate of £100.

Golden-square Throat, Nose and Ear Hospital, W.—H.S. £100.

[illegible]—Res. M.O. At rate of £156.

[illegible]s. M.O. and Asst. M.O. £500.

[illegible]Res. Asst. M.O. £400.

[illegible] *Ormond-street, W.C.*—H.P. and

[illegible]

[illegible]vich Hospital.—H.S. £120.

[illegible]l Institution.—Asst. M.O. £350.

[illegible]—Son. Asst. Res. M.O. £350.

[illegible]sician.

Leeds Public [illegible]

[illegible].S. At rate of £175.

Leigh Infirmc [illegible]. and Two H.S.'s. Each

Liverpool Sta [illegible] £100.

Liverpool, Women's Hospital, Catherine-street.—H.S. At rate of £100.

London Homœopathic Hospital, Great Ormond-street and Queen-square, W.C.—Asst. Physician.

Manchester Babies' Hospital, Burnage-lane, Levenshulme.—Jun. Res. M.O. At rate of £50.

Manchester, Crumpsall Hospital and Institution.—Med. Supt. £1200.

National Hospital for Diseases of Heart, Marylebone, N.W.—Res. M.O. At rate of £150.

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[illegible] *Victoria Infirmary.*—Jun. Surg. Reg. £150.

Northwood, Mount Vernon Hospital.—H.S. At rate of £150.

Nottingham General Hospital.—H.S. At rate of £150.

Oswestry, Shropshire Orthopædic Hospital and Agnes Hunt Surgical Home.—H.S. At rate of £200.

Paddington Metropolitan Borough.—Visiting M.O. One and a half guineas per attendance.

Plymouth City General Hospital.—Med. Supt. £1000.

Preston, Sharoe-green Hospital.—Res. Asst. M.O. At rate of £150.

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KUNHARDT.—On Feb. 9th, suddenly, at his home, Gorse Hill, Totland Bay, Lieut.-Colonel John Kunhardt, I.M.S. (retd.).

MILLER.—At "Elm House," Hawick, on Jan. 10th, 1933, William Miller, M.B., Ch.B., M.R.C.P. Edin., younger son of Mr. and Mrs. William Miller, 5, Park-place, Dunfermline.

PARKIN.—On Wednesday [illegible] at The
Cedars, Osborne-road, [illegible] Parkin,
M.D., F.R.C.P., F.R.[illegible] [illegible]lizabeth
Parkin. Service at Jes[illegible] [illegible]on-road,
Saturday, 11.20 A.M. [illegible] [illegible]metery,
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Physical signs indicated disease of whole left lung with softening in progress about central area: fibrosis of right lung with restricted disease of apex of upper lobe which showed evidence of a small cavity and a fine subclavicular infiltration. The X ray examination showed on left side a large area of dense perihilar consolidation with a spread of a lighter nature towards periphery. Dr. Cameron stated that this particular picture of dense perihilar disease is not common in lung tuberculosis. In November, 1931, a left artificial pneumothorax gave a small partial collapse. In February, 1932, the patient was afebrile with normal pulse, cough practically absent, and sputum scanty but still containing tubercle bacilli; left lung fibrosing and pulling heart over.

Cultures of tubercle bacilli were obtained directly from the sputum in December, 1931, and January, 1932. Both strains were dysgonic and highly virulent for rabbits inoculated subcutaneously.

CASE 29.—Female, aged 33, farm-worker, admitted to *Lochmaben on March* 1st, 1932.

She was born on a farm in Kirkbride, Cumberland, and did all sorts of work, including milking the cows and making butter. She had no illness until ten years ago, when she had spasms of abdominal pain and according to her doctor was threatened with appendicitis. She lost 1 st. in weight which she did not regain. She began to cough in January, 1932, and about that time contracted a very bad cold which pulled her down. She came to her sister in Scotland for a change and was there recognised as a case of pulmonary tuberculosis. On the farm a cow with tuberculosis of the udder was destroyed a year ago. Mother died three years ago of heart trouble; father, one brother, and two sisters alive and well.

On admission the patient looked pale and thin, and there was slight systemic disturbance. X ray examination showed pleural effusion of lower third on left side with much pleural thickening above, obscuring lung. On right side infiltration about the root spreading up to upper lobe, with suggestion of breaking down about middle of lung, and also nodular spread into lower lobe.

Cultures of tubercle bacilli were obtained directly from the sputum in May and June, 1932. Both strains were typically bovine in cultural characters and in virulence for the rabbit.

Autopsy.—The woman died on Nov. 24th, 1932. At the autopsy Dr. Elder found no signs of tuberculosis in the abdominal organs or glands. The mesenteric glands were examined at Cambridge and were free from lesions. The appendix was fibrosed and bound down by adhesions to the brim of the pelvis. There were no enlarged glands in the ileocæcal region or in the neck.

The right pleural cavity was free from disease. On the left side the pleural membranes were thickened and adherent in the lower two-thirds. The base of the left lung was firmly adherent to the diaphragm at its outer margin and between the diaphragm and the lung there was a thin layer of thick pus. At the base of the lung five subpleural nodules were seen; they were almond-shaped and approximately 2 × 1 × ½ in. Lungs: from the root of the right lung fibrocaseous disease extended outwards affecting about two-thirds of the organ. The spread was fairly uniform in all directions and did not reach the periphery at any point. There were numerous cavities: the larger (about ½ in. diameter) were at the root and the excavations and caseous parts diminished in size from the root outwards. A similar condition was found in the left lung but the spread was not so uniform; it did not extend so high up but it reached the periphery and the base where the nodules previously mentioned were found. There was more cavitation in this lung.

The bronchial glands were examined at Cambridge. They were coal black. The prætracheo-bronchials showed no lesions. The intertracheo-bronchial on the right side was enlarged 3·5 cm. in length and 1·5 cm. in diameter, capsule thickened, and half or more of its substance was caseated. The corresponding gland on the left side contained a caseous nodule the size of a hempseed. Further along this bronchus, within the hilus, there was a pea-sized partly caseous gland and another just beyond showed a narrow part of the cortex opaque.

The definitely intrapulmonary glands on both sides were intensely anthracotic but showed no tuberculous lesions.

CASE 30.—Female, aged 27, domestic servant, born in Dumfriesshire. Admitted to Lochmaben in March, 1932.

No illnesses in childhood, at 19 years "rheumatic fever" and still suffers from pains in the joints, but there is no cardiac damage and quite recently she had a rash on the legs and arms lasting three days. Two years ago had an attack of influenza and lost weight which has not been regained. For the last two to four years she has not felt fit. She has always been fond of milk.

The X ray examination showed on right side well-marked root-spread along interlobar pleura with infiltration into upper and lower lobes and some evidence of breaking down in lower part of upper lobe; on left side increased root shadow with little or no evidence of infiltration.

Cultures of tubercle bacilli were obtained directly from the sputum in May and June, 1932. Both strains were dysgonic, and produced progressive general tuberculosis in rabbits. One strain caused general tuberculosis in a goat after subcutaneous inoculation, the animal dying in 58 days.

CASE 31.—Female, aged 28 years, domestic servant Admitted to East Fortune in February, 1929.

She was born in Midlothian, was fond of milk, and had enlarged glands in the neck in early childhood. On admission there were clusters of enlarged glands like small beans in the lower third of the left posterior triangle and in the left axilla; she had a cough and her sputum contained tubercle bacilli. X ray examination showed definite infiltrating tuberculosis of left upper lobe with thickening along upper part of root spreading out along septum: also evidence of infiltration into right lower lobe. Radiogram of spine showed doubtful compression of two lower dorsal bodies but no evidence of active spine disease. Laryngoscopic examination showed extensive infiltration of both vocal cords.

She improved very much and was discharged at her own request in November, 1929, having gained 7 lb. in weight (8 st. 8½ lb.): the sputum was negative. Three months later she began work as domestic servant and worked for 15 months. In April, 1931, her sputum was blood-stained and she gave up work on account of breathlessness. She became progressively more dyspnœic and was readmitted on May 28th, 1932; the sputum was laden with tubercle bacilli, mainly short.

X ray examination showed whole left lung involved in dense disease with extensive thick-walled cavities in left upper lobe; lighter infiltration of good definition in right upper lobe; calcified glands in neck. She slowly went downhill, and on Oct. 7th, 1932, asked to be allowed to go home, where she died a week later.

Cultures of tubercle bacilli were obtained directly from the sputum in June and September, 1932. Both strains were dysgonic and produced severe and rapidly fatal progressive general tuberculosis in rabbits inoculated subcutaneously.

CASE 32.—Female, aged 21, housewife. Home address, Cardenden. Admitted to Glenlomond in October, 1931.

She had no illnesses in childhood and from 14 years of age for six years worked on a farm as a milker and outworker. She drank a good deal of milk and she stated that during the last three years of her employment there was a cow which was a "piner" and was killed on the farm. She married at the age of 19 and has a child of 16 months. Her illness began in August, 1931, with a bad cold, and cough with a little sputum developed later. She began to get hoarse in September.

On admission X ray examination showed left lung infiltrated with signs of cavities in upper lobe. Small glands were felt in the posterior triangles. In December, 1931, artificial pneumothorax was done, giving a complete ribbon collapse of lung. Subsequently she improved continuously, cough and sputum subsided, and on May 28th, 1932, she was discharged, her general condition being very good.

A culture of tubercle bacilli obtained directly from the sputum in 1931 was dysgonic and virulent for rabbits.

CASE 33.—Female, aged 11.

She was breast-fed for three to four months, and then was brought up on Nestlé's condensed milk and oat flour until the age of 13 months. Subsequently she was given raw cow's milk. Enlarged glands in the neck were first noticed when she was 20 months old. The child was first admitted to Glenlomond Sanatorium in September, 1928, when she was 7 years old. Four months previously enlarged glands had been excised from the right side of the neck and the of 222 cases of phthisis pulmonalis, of which 70 were from Glenlomond, 88 from East Fortune, and 64 from Lochmaben Sanatorium. We are greatly indebted to Dr. C. Cameron, medical superintendent of East Fortune, and to Dr. G. W. Elder, medical superintendent of Lochmaben Sanatorium, for supplying us with specimens of sputum and for allowing us to consult the clinical records of the cases and personally to examine several of the patients.

The strains obtained from 212 of the cases exhibited the characters of tubercle bacilli of the human type, 209 of the strains belonging to the eugonic human and 3 to the dysgonic human variety. The latter were tested on the rabbit and proved slightly virulent for this species.

The strains, 20 in number, from the remaining ten cases were identical in cultural characters with bovine bacilli. All these strains were tested on the rabbit by subcutaneous, and in some instances also by intravenous, inoculation and produced in one or more animals rapidly fatal general tuberculosis indistinguishable from that which follows inoculation of standard bovine tubercle bacilli. One strain was tested on the goat and proved fully virulent for this species also.

Of the ten cases of bovine phthisis two were from Glenlomond, four from East Fortune, and four from Lochmaben Sanatorium.

Three have died and autopsies were made on two. In one instance (No. 27) the patient died before the type of infecting bacillus had been determined, and only a partial autopsy was made. The channel of the infection therefore was not determined. The occurrence in the case however of enlarged glands before the onset of phthisis indicated that the channel of infection was probably the alimentary canal.

At the second autopsy (Case 29) no tuberculous lesions were found in the neck glands or in the abdominal organs or lymph glands. The tuberculous disease was apparently confined to the thoracic cavity. There had been clinical indications of a cerebral tuberculoma in the left frontal lobe, but this could not be confirmed as permission to examine the brain was not granted. The intertracheobronchial glands, particularly the right, showed caseation, but there was no lesion in the lung which could be regarded as primary, the distribution of the pulmonary lesions suggesting rather a root-spread type of disease.

Though the anatomical evidence as to the portal of entry of the bacilli was inconclusive, it should be noted that this is the first autopsy on a case of bovine phthisis in which there were no signs of disease in the glands of the alimentary tract older than the pulmonary lesions. As the woman was a farm-worker and came as milker into close contact with cows this may be an example of infection with bovine bacilli through the respiratory tract, the vehicle of infection being, as suggested by Bruno Lange, dust from the hides of cows or arising in the shippons, or droplets sprayed by a cow suffering from tuberculosis of the lungs.

More autopsies on cow-contact cases and cases in which clinically there was no evidence of alimentary infection are clearly desirable and will be necessary to settle the question whether human phthisis pulmonalis can be produced by air-borne bovine bacilli.

Case Records

The clinical particulars of each of the ten bovine cases and the results of the bacteriological investigations of the strains isolated may be summarised as follows.

Case 26.—Female, aged 32, domestic servant. Home address, Kirkpatrick Durham, Kirkcudbright, admitted to Lochmaben in August, 1931.

Patient was healthy as a child, except for measles at 5, and never complained until after she was 16 years old. From 16 to 21 she had amenorrhœa and was easily tired. She married at 27 and has two children 6 and 5 years old. She was notified as a case of phthisis pulmonalis after the first child and lost her voice about a year ago. She liked milk and had been in the habit of drinking it raw, but she has not had enlarged cervical glands or symptoms of abdominal tuberculosis. Her father, a gardener, died five years ago at the age of 60; he had a cough for several years, diagnosed by his doctor as bronchial catarrh. One sister, aged 24, one brother, aged 21, and one sister, aged 29 years, died of "acute tuberculosis" in December, 1914, December, 1918, and April, 1930, respectively. Three sisters are alive. The mother died a year ago at age of 70.

In July, 1932, her condition was as follows: very thin, pale, breathless, not febrile, pulse about 100, speaks in a hoarse whisper. The X ray examination showed on left side, extensive infiltration with appearance of much breakdown in upper lobe, pleura thickened, and heart pulled over; on right side, shadow increased at root, spreading out into upper lobe, which was infiltrated and showed some evidence of breaking down. Dr. Elder thinks that it is undoubtedly an infection spreading from the roots.

Cultures of tubercle bacilli were obtained directly from the sputum in December, 1931, and in January and May, 1932. The three strains were dysgonic. Each strain was tested subcutaneously on the rabbit. The three rabbits died in 78, 100, and 53 days respectively of typical severe generalised tuberculosis.

Case 27.—Female, aged 35, housewife, admitted to East Fortune in June, 1931. Home address, Middlemaens, Pencaitland, East Lothian.

Two years ago she had enlarged cervical glands which discharged. In December, 1930, she had a bad influenzal cold and cough was severe for some time, but she was able to do her housework. In February and March, 1931, she felt better, but at the end of March she had another attack of "influenza." From that time she became thinner and weaker and cough has been persistent and severe with copious sputum. On admission firm glands were palpable in both posterior triangles and supraclavicular areas, and there was a scar from a glandular abscess which healed two years ago. The lung signs were those of extensive fibrotic disease of the left lung consolidatory in nature with areas of activity in the upper lobe; there was less dense but also active disease of the upper half of the right lung. Dr. C. Cameron thought the disease had been in existence at least two years. A radiogram showed upper third of left lung honeycombed with cavities and many cavities in the upper and middle lobes of the right lung and infiltration of lower lobe. She died in February, 1932. Unfortunately the type of infecting bacillus had not then been ascertained and only a partial necropsy was made. Both lungs were densely adherent, the upper lobe of the left being completely excavated and containing pus; the lower lobe was densely fibroid and contained multiple cavities; there was fibroid disease with multiple cavities in upper half of right lung.

A culture of tubercle bacilli was obtained directly from the sputum in January. The strain was dysgonic and virulent for rabbits.

Case 28.—Female, aged 25, housewife. Home address, Linlithgow, West Lothian. Admitted to East Fortune in October, 1931.

She had pneumonia between 6 and 12 years of age and "influenza" at 13 or 14. In 1926 her appendix was removed, but no mention in records of abdominal tubercle. She then remained well until January, 1930, when she took what she described as a chill followed by loss of appetite, loss of weight, and general weakness. Her history afterwards was the usual oscillating one, sometimes fairly well and sometimes ill with fever, headache, and general malaise, and at intervals pleural pain. There is no family history of tuberculosis. She has one boy aged 3 who is well.

On admission her general condition was poor; fairly severe cough; sputum purulent, 1 oz. daily, contained tubercle bacilli in small number, one or two per field.

Conclusions

1. The bovine tubercle bacillus is a more frequent cause of phthisis pulmonalis in Great Britain than is generally supposed.
2. Phthisis pulmonalis due to bovine tubercle bacilli is often a late manifestation of an infection acquired in childhood through the channel of the alimentary tract.

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MONOCYTIC LEUKÆMIA: TWO CASES

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Anomalous types of white cells are often found in the blood in cases of acute and subacute leukæmia, more especially when the total leucocyte count is not greatly increased. In practice the problem is most frequently that of discriminating between myeloblasts and lymphoblasts, and it is sometimes difficult or impossible to make this distinction with certainty. The question is further complicated by the fact that in the literature cases are to be found in which the authors are convinced that the characteristic cell is related to the monocyte or large hyaline leucocyte. Hæmatologists are not agreed as to the existence of a true monocytic leukæmia, and the following two cases are therefore reported in some detail.

THE FIRST CASE

A stableman, aged 40, was admitted to St. Mary's Hospital in September, 1930, complaining of constriction of the neck, and attacks of giddiness and pain radiating into right neck. The family history was unimportant. He had had malaria during the late war. General weakness and swelling of face and hands had begun in the previous April, and had increased since then. He ascribed the illness to the removal of teeth in April. On examination he was pallid, feeble, with some dilatation of the veins of the neck, and puffy hands; a blood count (see Table I.) showed a marked leucopenia, especially of the polymorphonuclear leucocytes.

The condition was diagnosed as myxœdema, and subsided, with great alteration in the facial and cervical contour, as a result of treatment with thyroid gland. He was discharged at his own desire and returned to work but failed to continue with the thyroid, reappearing in the out-patient department with more œdema and weakness. In hospital for three weeks (December, 1930) he once more improved with thyroid. After returning to work he experienced considerable dyspnœa, palpitation, anorexia, great weakness, nausea, headache, giddiness, numbness, and tingling in the hands.

On June 15th, 1931, he was readmitted to hospital for the last time. Three weeks previously pain had developed in the left axilla. He was pale and sallow, looked very ill, and slept most of the day; the eyebrows were scanty. Temperature 101° F., later 104° F. and irregular; pulse 80 to 100, rapid and soft; respirations 22 per minute, deep and regular; blood pressure 120/60. A gland, the size of a pigeon's egg, was found in the left axilla, this caused him much pain and later developed into an abscess which opened (July 13th) and drained, staphylococci being recovered from the pus. X rays showed no evidence of any definite pulmonary disease.

On August 11th the condition was much improved, except that a discharge had developed from the antra which were drained on August 18th and again on the 21st. It was noted on the 29th that the skin seemed to have coarsened lately. Multiple small cutaneous "abscesses" began to develop from this time; these were painless and formed indolent craters with yellow pus from which *Staphylococcus aureus* was grown. Blood culture was negative.

Blood transfusion on Sept. 21st, 1931, was followed by a rigor and led to no permanent improvement. The liver first became palpable on Sept. 15th, enlarged to two inches below the costal margin. By the 25th the general condition showed a marked deterioration and albumin appeared in the urine. He complained of aching in the eyes, which was relieved by wearing deep blue glasses. On Oct. 2nd the back and neck were covered with cutaneous abscesses and X rays showed empyema of both antra, the left frontal sinus being also suspect. The antra were drained (Oct. 6th) and the general range of temperature became more limited, but his condition became progressively more lethargic, and he developed secondary broncho-pneumonia and died on Oct. 13th.

Table I.—*Blood Counts in Case 1*

	1930	1931				
Date	22/9	17/6	17/7	13/8	3/10	15/10
Red cells, millions per c.mm.	3·48	2·30	2·15	2·20	2·14	—
Nucleated red cells per c.mm.	—	—	100	A few	600	—
Hæmoglobin per cent. ..	70	36	38	36	34	—
Colour-index..	1·0	0·8	0·9	0·8	0·8	—
White cells per c.mm. ..	1800	5000	5000	4500	8000	10,000 approx.
Polymorphs	25 %	9 %	9 %	—	4 %	1 %
Myelocytes	1 %	1 %	—	—	—	
Lymphocytes	56 %	19 %	12 %	—	19 %	26 %
Lymphomonocytes	10 %	6 %	18 %	—	8 %	6 %
Monocytes	8 %	65 %	57 %	—	66 %	66 %
Ghosts	—	—	4 %	—	3 %	1 %
Oxidase-positive WBC ..	—	—	—	51 %	15 %	68 %

The *blood counts* are detailed in Table I. The cells classified as monocytes showed a considerable histological variation from the large hyaline leucocyte of the normal blood. In the later films they were large cells, averaging 15 to 20 microns in diameter, with (in Leishman preparations) muddy-blue cytoplasm frequently thrown out into pseudopodia and showing a varying amount of granulation. The granules had the staining reactions of "azur" granules, but in the later films were much more numerous than in normal cells; they were generally round dots but many were short rods. Not infrequently the cytoplasm was vacuolated. The nuclei were round, indented, reniform, or horseshoe shaped, but never showed true lobation; for the most part their chromatin had a uniform finely woven reticular pattern, but very occasionally nucleoli were present. The nuclei sometimes showed vacuolation similar to that seen in some of the lymphocytes. The oxidase reaction of the monocytes, as is apparent from the differential counts, was inconstant, and when positive the intensity of the reaction was variable. The lymphocytes showed much variation in the staining of their cytoplasm and nuclei, the latter frequently being fenestrated in a manner recalling the appearances of the blood film in glandular fever. The range of variation was so great that in the case of a number of cells it could not be stated with confidence whether they were monocytes or lymphocytes; such cells have been arbitrarily classified as lymphomonocytes. The rare examples of polymorphonuclears found in all the films were in every way typical. Supravital staining (Oct. 6th 1931) showed incision, 2½ in. long, was still not completely healed. Many small glands could be felt on both sides of the neck, and on palpating the abdomen enlarged glands (?) could be felt in the right iliac fossa. There were numerous enlarged venules over the chest but no active lesion was found in the lungs. Both eyes showed corneal nebulæ. The child had slight systemic disturbance, did not improve much, and was taken home in June, 1930. She was readmitted in October, 1932, thin and ill, temperature 100°, pulse 110, with small softened glands on both sides of neck, and evidence of active intestinal ulceration. There was also extensive disease of the lungs, more on the right than on the left side; on the right side the right upper lobe was chiefly affected and on the left there was a root-spread type of disease. The sputum contained tubercle bacilli. Early in January, 1933, a caseous and softened gland was excised from the neck.

Cultures of tubercle bacilli were obtained directly from the sputum on four occasions, twice in November, and twice in December, 1932. All the strains were dysgonic and highly virulent for the rabbit. Cultures were also obtained from the cervical gland, directly and through the guinea-pig. Both strains are dysgonic but have not yet been tested on the rabbit.

CASE 34.—Male, aged 17, of Linlithgow, West Lothian. (Clinical notes by Dr. C. Cameron.)

The patient was admitted to East Fortune in September, 1932, for treatment of advanced tuberculosis of the lower part of his spine. He stated that at the age of 3 he fell out of a railway wagon and hurt the foot of his back but it was impossible to determine whether or not this had anything to do with the present condition. The first definite treatment which he received for spinal tuberculosis was nine years ago (he was then eight years old) when he had treatment of some kind for six months in a Lanarkshire hospital. The disease must have been well established since there was some stiffness of the legs. He attended school again and so far as could be determined finished his school period. He had been confined permanently to the house during the six months preceding his admission to the sanatorium.

His condition on admission was deplorably bad. He was pallid, emaciated, and weak. His skin was harsh and dry, and he had the appearance of suffering from advanced active tuberculous disease. There was a sharp gibbus involving the lower lumbar spine and part of the sacrum, a radiogram showing advanced destructive tuberculous disease of the fourth and fifth lumbar vertebræ and upper part of the sacrum with extensive abscess shadowing, largely calcified, spreading around the lower lumbar spine and into the pelvis. No one appears to have examined his lungs, although he had passed through a surgical ward of an infirmary. I found him to have advanced and dense fibrocaseous disease involving practically the whole of his left lung. The left diaphragm was caught and raised by adhesions. He had similar disease of the right upper lobe again containing several cavities with some lighter infiltrative disease of the lung below. We obtained from him with difficulty a scanty sputum in which a few tubercle bacilli were found. The sputum was brought up at intervals, sometimes scanty but densely purulent, at other times watery and containing purulent streaks. He has remained irregularly febrile but his condition has undergone very definite improvement.

Until within the last year he practically never got milk apart from that given in tea. A brother, aged 13 years, had tuberculous neck glands excised three years ago, since when he has been well.

Pure cultures of bovine tubercle bacilli were obtained directly from the sputum in September and October, 1932. Both strains were fully virulent for the rabbit.

CASE 35.—Female, aged 28, housekeeper. Admitted to Lochmaben Sanatorium in December, 1932. The full clinical particulars and bacteriological results in this case are not yet available.

Summary

The number of cases of phthisis pulmonalis with bovine tubercle bacilli in the sputum reported in England and Scotland has now reached the startling figure of 49. The majority of these cases, namely 45, have been discovered within the last ten years. We cannot say whether this large addition indicates an increase in the proportional frequency of bovine phthisis in recent years or not, since most of the cases were found in parts of the country where investigations had not previously been made.

From a comparison of the findings in different parts of the country it would appear that phthisis due to bovine bacilli is less frequent in the south of England than in the north of England and in Scotland. The bovine percentages for these different regions are 0·6, 3·8,* and 3·9 respectively.

The ages of the patients when the bovine bacilli were found in the sputum ranged from 7 to 59 years. They were distributed in the various decennial age-groups, as follows :—

0– 9 years	..	1 patient,	7 years old.
10–19 ,,	..	12 patients,	8 of them 17 to 19 years.
20–29 ,,	..	25 ,,	14 ,, ,, 20 to 25 ,,
30–39 ,,	..	6 ,,	
40–49 ,,	..	4 ,,	
50–59 ,,	..	1 patient.	

The majority of the patients were therefore adolescents and young adults.

Of the 49 patients, 31 were females and 18 were males. At least 20 of the patients gave a history of enlarged glands in the neck or of abdominal trouble before the onset of phthisis pulmonalis. In the remainder no history of glands in the neck or symptoms suggestive of abdominal tuberculosis was elicited, but it may be mentioned that an autopsy on one of these cases showed the primary lesions in the mesenteric glands.

Generally there was a history of cough and sputum for one or two years before admission to the sanatorium, but in some instances there was a longer history, and one of Cumming's cases was known to have had positive sputum ten years before the bacteriological investigation established the type of bacilli present in the sputum. Some of the patients are still alive, five to nine years after the bacilli in the sputum were identified as bovine. It is remarkable in view of this fact that none of the cases, so far as we have been able to ascertain, has transmitted the infection to another human being, and that with two possible exceptions none of the cases appears to have acquired the infection from a previous human source.

Six of the cases were in persons who, in their employment on farms as milkers, &c., came into close contact with cattle. One of these persons, a woman aged 33 years, died, and an autopsy was made. No lesions were found in the lymph glands of the alimentary tract, but there was caseation of the glands at the bifurcation of the trachea. This may not be quite enough to enable us to affirm that the infection was of respiratory origin.

Twenty-two of the patients have died, the duration of life after the bacilli were identified ranging up to five years. Autopsies were made in six instances. The examinations were not in all cases complete, but in three instances the anatomical evidence was definitely in favour of the alimentary tract as the portal of entry of the bacilli.

The work is continuing, and we reserve a full discussion of the results until the investigations are completed, when, in collaboration with Dr. Cumming, we propose to collect together in one report all the facts ascertained in this important group of cases.

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* The case from Cumberland (No. 29) in our series has been included in Cumming's figures for the North of England.

Two skin nodules.—Aggregations of monocytes in the dermis with necrosis of the central parts of the nodule.

Colon.—Macrophages containing coarse granules of iron pigment in stroma of mucosa.

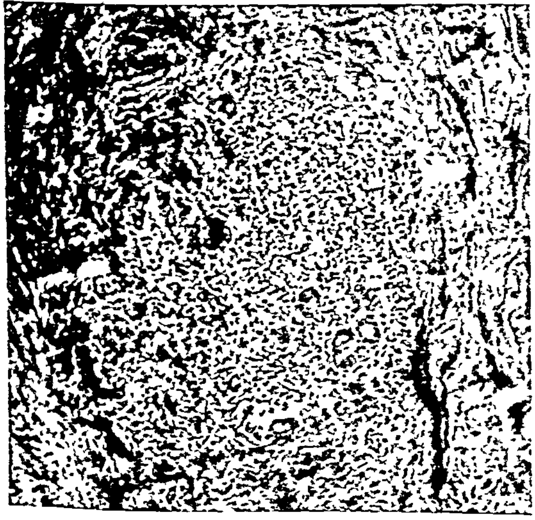
THE SECOND CASE

An upholsterer, aged 71, was in bed for three weeks with influenza in February, 1932, and this was followed a week later by a severe attack of vomiting and diarrhœa lasting four days. When he was seen in the out-patient department on April 14th his appetite was poor, and he had been losing weight and becoming increasingly pale. On admission to St. Mary's Hospital (April 18th) he was pale, feeble, and noticeably drowsy. The liver was slightly enlarged, the spleen not palpable, and the heart showed some dilatation with hæmic murmurs. Achlorhydria was present, and a trace of occult blood in the fæces. X rays showed no alimentary abnormality. He ran an irregular fever and gradually lost weight and strength, dying on May 21st.

TABLE II.—*Blood Counts in Case 2*

Date in 1932—	14/4	28/4	9/5	10/5	19/5	20/5
Red cells in mills...	2·68	1·96	—	1·88	1·50	—
Nucleated red cells	—	—	400	—	—	—
Hæmoglobin ..	54	40	—	36	26	—
Colour-index ..	1·0	1·05	—	1·0	0·9	—
White cells ..	35,200	4,400	18,800	6,200	140,000	—
Polymorphs ..	12 %	11 %	21 %	—	2 %	4 %
Lymphocytes ..	8 %	33 %	15 %	—	4 %	6 %
Lymphomonocytes	—	12 %	11 %	—	6 %	6 %
Monocytes ..	80 %	44 %	53 %	—	88 %	84 %
Oxidase-posit. WBC	—	—	25 %	—	18 %	—

FIG. 2



Thyroid from Case 1. (× 100.)

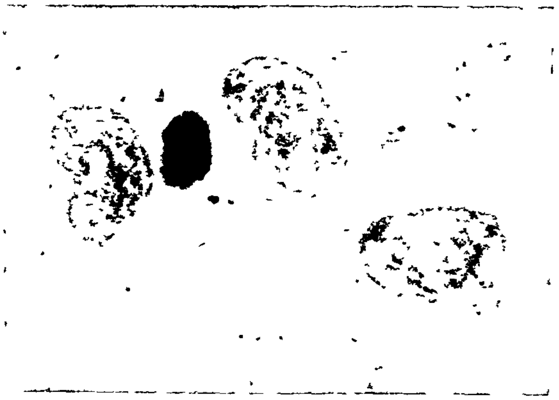
The blood counts are shown in Table II. The monocytes were large cells of morphology similar to those of Case 1, with muddy cytoplasm and pseudopodia, and finely reticular reniform or round nuclei, sometimes fenestrated (Fig. 3). In the films of May 19th two such cells were seen in mitosis, and on the 20th two of them contained an ingested red corpuscle. Supravital staining with neutral red demonstrated their characteristic phagocytic activity. Their oxidase reaction was inconstant but generally negative.

NECROPSY

Nutrition poor. Rigor passing off, greenish discoloration of anterior abdominal wall. Subcutaneous fat very small in amount.

Heart.—Slight, very recent, terminal fibrinous pericarditis. Subpericardial petechiæ. and a few dark pink leukæmic nodules (0·1 cm. diameter) on surface of heart. Myocardium soft and flabby, having a yellowish tinge on the endocardial surface with slight "tabby-cat" marking. Endocardium and valves normal. Much typical leukæmic clot in chambers of heart, pulmonary artery, and veins. Atheroma remarkably slight for age.

FIG. 3



Blood film from Case 2, showing three monocytes and a small lymphocyte. (× 1300.)

Larynx, trachea, and bronchi normal. Œdema, emphysema, and hypostatic congestion of *lungs.*

Tongue heavily furred, marked increase of lymphoid tissue at base. Tonsils enlarged, œdematous. and homogenously fleshy. Pharynx and œsophagus normal. Submucous myoma (0·7 cm. diameter) in anterior wall of stomach, 3·5 cm. from cardiac orifice. Multiple ulcers of *small intestine*—most of them were irregular patches covered with a fibrinous membrane of diphtheroid type; in the ileum they frequently involved Peyer's patches; in the jejunum a large ragged ulcer with irregular edges and a black base was firmly adherent to the sigmoid colon in the left iliac fossa. Solitary lymphoid follicles of large intestine enlarged (average 0·2 to 0·3 cm.); positive Prussian-blue reaction in entire length of mucosa of colon. Pancreas, gall-bladder, and bile-ducts normal.

The *liver* was enlarged (1870 g.) with post-mortem discoloration of lower edge and posterior surface. On section it was pale in colour and swelled over its capsule. The pattern was obscured, the peripheral parts of the lobules being pale and greyish-white in colour, and the centres brown. It contained free iron, as estimated by the Prussian-blue reaction, in considerable amount.

The *spleen* (510 g.) swelled slightly on section, the cut surface being pale pink and practically devoid of pattern. The Prussian-blue reaction was strongly positive, and after the test was carried out the Malpighian bodies became more readily distinguishable as minute unstained foci.

The *lymphatic glands* were all considerably enlarged, and contained free iron. On section they were generally pale, sometimes mottled with red, but many showed a distinct greenish tinge. The bone-marrow of the femur was red in the upper 30 cm. of the shaft, the colour becoming deeper from above downwards, and fatty with small reddish spots in the lower 10 cm.; free iron was present.

Kidneys slightly enlarged (300 g.), pattern blurred, free iron around the arcuate vessels. Bladder and prostate normal. Testes œdematous, small left varicocele.

Thyroid small, rather tough, with prominent fibrous trabeculæ and little colloid. Parathyroids, suprarenals, and pituitary normal. Thymus replaced by fat.

Brain and meninges normal.

HISTOLOGY

Lymphatic glands.—Cervical, aortic, and mesenteric glands all show changes comparable with those of Case 1, the pattern of the glands being lost to a great extent, and the largest proportion of monocytes being found in the subcapsular and medullary parts of the glands. Mitotic figures are fairly common. The capsules and periadenoid tissues are also infiltrated to some extent, as is the excess fibrous tissue of the medulla of the aortic glands. Some

33 per cent. of white blood-cells giving the reaction of monocytes.*

NECROPSY

Body thin and poorly nourished (weight 48 kg.). All tissues anæmic. Two sinuses leading from abscesses in the left axilla; abscesses also present in the right axilla, left side of neck, and over lower end of sternum. The skin of the whole body covered with brownish spots about 1 cm. average diameter, most of which showed a central scab of pinhead size.

Heart normal size, parenchymatous degeneration of myocardium; very little atheroma in arteries. Trachea and bronchi contained a little thin, frothy, slightly blood-stained fluid; 150 c.cm. clear fluid in each pleural sac. Right *lung* anæmic, with emphysema and œdema; broncho-pneumonia with peribronchial hæmorrhagic areas and in many places confluent, of the left lower lobe, and recent fibrin on its pleural surface. Mouth, tongue, and pharynx normal; tonsils enlarged with a greenish tinge on section; in the posterior wall of the *œsophagus*, 6 cm. below the bifurcation of the trachea, there was an oval dark rough granular area surrounded by a hæmorrhagic ring (2 × 1 cm.); on section this was superficial and its base consisted of a black line; just below it a similar smaller lesion. Stomach and small intestine normal. *Colon* showed dark brown pigmentation of mucosa which gave a positive Prussian-blue reaction, also a definite increase in the lymphoid tissue. Pancreas normal; lipoid deposits in the mucosa of gall-bladder.

The *liver* was markedly enlarged (2520 g.) and had a pinkish-brown colour. On section the lobular pattern was clear in some parts and blurred in others. The peripheries of the lobules contained fat, the centres were darker than normal, and the portal systems were unusually conspicuous. On treatment with potassium ferrocyanide and hydrochloric acid a well-marked Prussian-blue reaction was given, indicating the presence of free iron.

The *spleen* was somewhat larger than normal (270 g.), œdematous, and had a definitely brownish colour. The Malpighian bodies were smaller than normal, the fibrous trabeculæ somewhat more obvious than usual. Free iron was present.

All the *lymph glands* in the body showed a substantial increase in size. On section they were of a greenish colour with red and yellow mottling; some of them had a granular appearance; they contained free iron. The *bone-marrow* of the femur was red throughout the medullary cavity. In the upper part of the shaft it was a dull greyish-red and rather granular, in the lower part dark glossy-red and gelatinous in appearance.

The thymus was replaced by fat and fibrous tissue; left suprarenal small with thin cortex, right normal. *Thyroid* only slightly smaller than normal; on section white, tough, and fibrous. The *kidneys* were pale and œdematous, on section both the cortex and medulla swelled appreciably; the cortical pattern was clear in some places, blurred or lost in others. Right ureter double as far as the brim of the pelvis. Bladder, prostate, and testes normal.

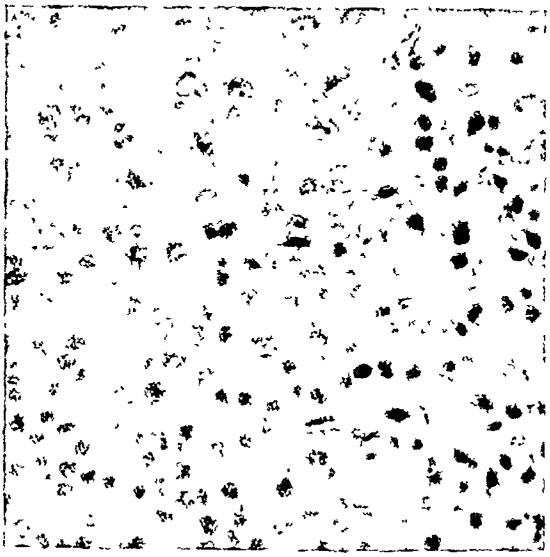
Examination of the head was not permitted.

HISTOLOGY

Lymphatic glands.—Several glands from the aortic, deep cervical, and mesenteric groups were examined, and all show numerous large mononuclears (which will in future be referred to as monocytes) infiltrating the gland substance and obliterating the pattern to a greater or less extent. These cells are large irregular cells, the cytoplasm of which stains slightly more with eosin than the normal reticulum cells. The nuclei are more or less round, with a well-marked nuclear membrane and though many show acidophil nucleoli, the latter are more usually absent. They are most numerous in the subcapsular lymphatic space and in the sinuses of the medulla, but all regions of the gland are invaded to some extent. Many of them contain much altered blood-pigment which gives a positive reaction for iron and occasionally there are ingested erythrocytes. In frozen sections a large number of oxidase-positive cells can be found, although polymorphs are conspicuously absent. Some of the monocytes show a coarse eosinophil granulation; this is particularly marked in large irregular cells lying in the pericapsular fibrosis around the aortic and cervical glands. A few multinucleated monocytic forms are seen, as well as occasional megakaryocytes (Fig. 1).

Spleen.—The Malpighian bodies are small and mis-shapen. The pulp is uniformly œdematous and the pattern is practically indiscernible, as a result of the presence of large numbers of monocytes comparable with those in the lymph glands and showing similar variants. There is a very large amount of iron-containing pigment in the pulp, partly in monocytes, and partly in large irregular macrophages which may be identical. Polymorphonuclears are absent, but the pulp contains numerous oxidase-positive elements.

FIG. 1



Lymph gland from Case 1; upper and lower parts of field mostly monocytes and lymphocytes respectively. (× 500.)

Liver.—General œdema. Fat is present in large amount, especially in the peripheral half of the lobules, the cells of which are distended with large droplets. The interlobular veins are dilated, and their blood contains many large mononuclears. Monocytes are scattered loosely and uniformly throughout the sinusoids. They are similar to, if slightly smaller than, those in other tissues, but show more variation in shape of nuclei. Some of them are drawn out in cytoplasmic processes and applied to the capillary walls like Kupffer's cells, and the distinction between the two cannot always be made apart from the oxidase and Prussian-blue reactions. Iron is present in large amount in the Kupffer's and the liver cells of the central zone of the lobules, to a less extent in the peripheral liver cells, and to a slight extent in the monocytes. The monocytes give a well-marked oxidase reaction.

Bone-marrow.—The fat is almost completely replaced by œdematous cellular tissue. Its cytology is unusually uniform, as nearly all the nucleated cells are monocytes, with only a few erythroblasts and an occasional megakaryocyte. The monocytes are similar to those found in other places but a few mitoses are observed, such cells having a more eosinophil cytoplasm. There is a number of multinucleated cells not unlike the Dorothy Reed type. Myelocytes and polymorphs are absent. Nearly all the monocytes give the oxidase reaction, in some it is weak and indefinite, but in fully half of the cells it is well marked. The oxidase-granules, however, are considerably less numerous than in true granulocytes. Much hæmosiderin is present.

Thyroid.—The gland is replaced by dense fibrous tissue and vessels, with numerous lymphoid foci and a few scattered atrophic epithelial tubules. Slight proliferation of elastic tissue around blood-vessels and tubules (Fig. 2).

Lung.—Broncho-pneumonia, the exudate being mainly composed of fibrin and monocytes, with very occasional polymorphonuclears. Necrosis in centres of foci of consolidation, œdema between them.

Kidney.—Cloudy swelling. A few monocytic foci in the connective tissue round the arcuate vessels.

Tonsil.—Numerous monocytes in the deeper layers.

Œsophagus.—Ulceration and necrosis (probably partly post mortem) with karyolysis and colonies of moulds on the mucous surface. Below this a wide zone of monocytes, and then some fibroblastic proliferation. No polymorphs.

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* I do not use Sabin's method of supravital staining exactly as described by her, since we have no hot-box in the laboratory. The slides are prepared in the same way as that employed by Sabin, with a thin film of neutral red (with or without Janus green); the blood is taken in the same way; but after vaselining the edges of the cover-slip the slide is placed in the incubator, and removed for microsc time to time. If this is done fairly quic remain alive long enough to show the properties of the monocyte.

from 6600 (59 per cent. monocytes) to 416,000 (96 per cent. monocytes) in the four and a half months preceding death; the post-mortem histology was comparable with the present cases except that the monocytes in the tissues were oxidase negative. The case of aleukæmic monocytosis, published by Rosenthal in 1921, has a blood picture similar to that now recorded. The only example reported in this country seems to be that described by Cooke in 1931 in a boy of 19; the leucocyte count was 49,800, of which 87 per cent. were monocytes; autopsy was not permitted.[†]

Naegeli disputes the existence of monocytic leukæmia, coming to the conclusion after a review of published cases that they consist in a monocytosis of the blood associated with myeloid hyperplasia in the tissues. Piney suggests that the evidence is all in favour of the conception of monocytic leukæmia belonging to the group of myelosis. The tissue changes in the present cases, however, did not resemble myeloid hyperplasia, except that some of the cells were oxidase positive; apart from the distinctive morphology of the individual cells their uniformity was much greater than is the rule in myeloid infiltrates; the relatively much greater involvement of the lymph glands than of the spleen is quite unlike myelogenous leukæmia; the presence in the type cells of ingested erythrocytes and hæmosiderin indicates affinity to the monocyte rather than the granulocyte.

It seems desirable to indicate briefly certain points of inter-resemblance between the two present cases. Clinically these include the insidious onset, pallor and weakness, notably the marked drowsiness throughout, enlargement on palpation of the liver but not of the spleen, and the blood changes. Necropsy showed marked involvement of the lymphatic glands and liver, definite hyperplasia of the marrow, and relatively moderate enlargement of the spleen. Both cases showed necrotic ulcers of some part of the alimentary canal. Histologically the tissues were infiltrated with monocytes, and free iron was found in the liver, spleen, bone-marrow, and lymph glands; the iron in the liver was greater in amount in the hepatic cells in the centres of the lobules than in those at the peripheries—an unusual distribution of siderosis. Finally, in both cases degenerative changes were present in the thyroid gland; no similar record has been found elsewhere. This association may be of ætiological importance or may be only coincidence—a point which will be elucidated by future experience.

My thanks are due to Prof. F. S. Langmead for permitting me to use the clinical records of these cases, and to Dr. C. W. Morley for the photomicrographs.

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PLEURAL EMPYEMA AS A COMPLICATION OF PYONEPHROSIS

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AMONG surgical conditions of the kidney commonly met with pyonephrosis represents a considerable proportion, the total number of admissions to the London Hospital during the last ten years being 180. Among these, however, the incidence of severe pulmonary complications has been surprisingly small.

It is well known that operations on the kidney are occasionally attended by post-operative effusion of fluid in the corresponding pleural sac. This especially follows difficult cases of nephrectomy for new growth in which the diaphragm is involved. Even this complication, however, is not so common as might be expected from the close anatomical relation which the kidney bears to the diaphragm. In cases of pyonephrosis the incidence of pulmonary complications appears to be even less, and a search through the records for the last ten years reveals only five deaths from pulmonary complication in this condition. Two of these cases revealed empyema pleuræ and two broncho-pneumonia, and one showed broncho-pneumonia with peritonitis.

The following are the notes of three cases which came under my notice:—

THE FIRST CASE

History.—Four weeks before admission the patient, a man aged 43, was taken ill with severe pain in the left loin. The pain settled down into what he described as a worrying ache. He became more restless, and could not lie in one position for more than a few seconds at a time. That evening he became worse and vomited three times. There was no trouble with micturition and the bowels were opened that day. The temperature rose to 103° F., and he complained of feeling very dry and parched. The next morning he vomited again. The pain was still present, though not so severe, and the temperature was down to 100°. That night the temperature was again 103° and this diurnal variation persisted for seven days. On the fourth day the pain ceased, and an examination of the urine at this stage showed nothing abnormal. He remained in bed for 11 days, when he was allowed up, but the pain immediately returned with a sudden rise of temperature to 104°, accompanied by shivering. He returned to bed, and at this time began to notice a swelling in the left side and a feeling of tightness and distension of the upper abdomen. The urine was not examined. At night he now began to sweat profusely, was very thirsty, and had lost all appetite. Taking food increased the pain but he did not vomit again. He felt very weak and began to waste.

During the third and fourth weeks the symptoms were increased, and added to them was difficulty in breathing, with marked pain in the left chest. Coughing was especially painful. The bowels were open regularly without aperients during the whole course. The urine was not tested again after the first week.

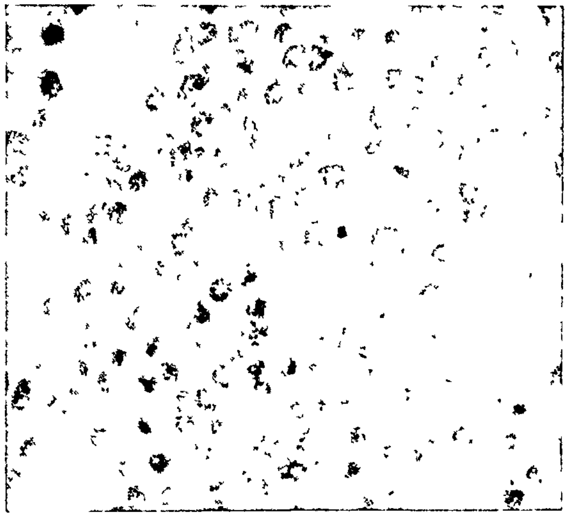
On admission the patient looked very ill. His temperature was 102·6°, his *pulse-rate* 112, and his respiration-rate 32. The face was sunken and pale, with a hectic flush on the cheekbones. The tongue was dry, with a dirty brown fur. He was sweating profusely. On inspection there was marked bulging in the left loin. No respiratory movement of the abdomen was seen on the left side. On palpation the swelling was very tender and did not move on respiration. The fingers could only with difficulty be depressed between the left costal margin and the swelling. On bimanual palpation of the loin the swelling could be pushed up from behind and a distinct cystic feeling was elicited. On percussion a band of resonance was found in front of the swelling, but posteriorly the dullness was continuous from the erector spinæ outwards and to the front until the band of resonance was met.

There was a distinct bulge of the lower intercostal spaces in the mid-axillary line. Tactile vocal fremitus was lost, and the left chest was stony dull up to the sixth rib in the mid-axillary line. Breath sounds were absent over the lower part of the chest, but in the upper part many moist phagocytosis of red cells. All glands show a high proportion of oxidase-positive monocytes. Iron-containing pigment in small amounts.

[†] This statement now requires qualification, as since this paper was completed a paper has been published by R. Gittins and J. C. Hawksley (Reticulo-endotheliomatosis, Ovarian Endothelioma, and Monocytic Leukæmia, Jour. Path. and Bact., 1933, xxxvi., 115). These authors include an exhaustive survey of the literature.

Bone-marrow.—Marked hyperplasia of monocytes, slight hyperplasia of erythroblasts, much karyorrhexis. Many of the monocytes are oxidase positive. Iron is mostly contained in large macrophages and elongated, possibly endothelial, cells, but there is some in the monocytes.

FIG. 4



Subpericardial leukæmic nodule from Case 2 ; cells are all monocytes, two being in mitosis. (× 500.)

Spleen.—Malpighian bodies very small; pulp packed with monocytes, mostly oxidase positive. Karyorrhexis in scattered foci. Much iron pigment in monocytes and reticulum cells of pulp.

Liver.—Monocytic infiltration most marked in portal systems, gradually becoming less dense as the centres of the lobules are approached. Monocytes generally oxidase positive. Siderosis of Kupffer's cells and liver cells, especially those in the centre of the lobule; less in the monocytes; hæmofuscin also present in considerable quantity. Very little fat, only a few globules in the peripheral cells.

Tonsil.—Monocytic infiltration; mitoses in both squamous epithelial cells and monocytes. Lymphoid tissue in immediate relation to crypts only.

Heart.—Fatty degeneration. Subpericardial periarteriolar nodule consisting of monocytes, several undergoing mitotic division; karyorrhexis at periphery (Fig. 4).

Intestine.—The membranous and ulcerated lesions show a coagulative necrosis involving all layers, the mucosa and muscularis mucosæ especially, and a small amount of fibrinous exudate. The cellular reaction consists almost entirely of monocytes with very few polymorphs. In Peyer's patches the deeper lying lymphocytes are replaced by monocytes.

Thyroid.—Definite degenerative changes are present. The gland is divided into lobules by trabeculæ of fibrous tissue, and finer collagenous fibres surround almost every individual vesicle. The vesicles show great variation in size, but most of them are very small, and are either empty or contain granular material; their epithelial cells are small, more or less flattened, and sometimes deficient. The few normal-sized vesicles contain colloid which generally stains poorly (Fig. 5).

Pituitary and parathyroids normal.

Lung.—Emphysema. Patchy œdema.

Kidney.—Monocytic infiltration in and around the adventitia of the arcuate and interlobular arteries, and around small groups of glomeruli.

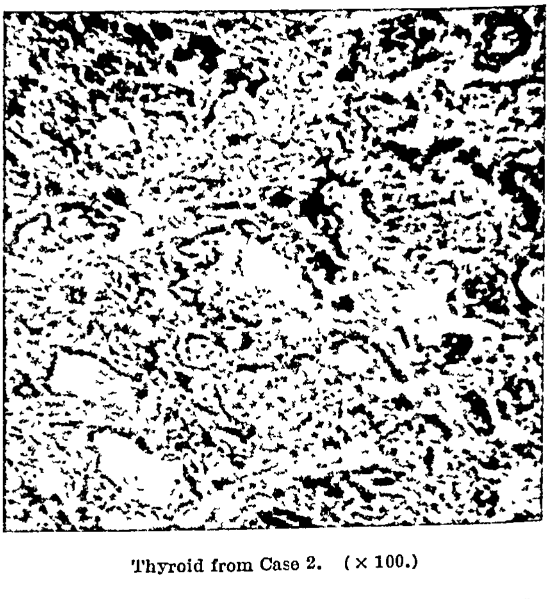
Discussion

These two cases conform to the usual conception of leukæmia in that there was a preponderance of one type of cell in the circulating blood associated with infiltration of the hæmopoietic organs, adult and fœtal, with the same type of cell. In Case 1 the total leucocyte count was at no time appreciably greater than normal, but this is not a serious objection to the use of the term "leukæmia," as many instances are on record in which the leucocyte count has been very low throughout, and it is well known that a so-called "aleukæmic phase" may occur in the course of a leucocythæmia of considerable magnitude. The leucopenia, especially of the granulocytes in Case 1, which was present 13 months before death, suggested the possibility of agranulocytosis, but the literature on this condition contains no comparable case. The granulopenia is, however, of interest, since Weiss (1927) has expressed the belief that every acute leukæmia is preceded by a greater or less degree of hypogranulocytosis.

In both the present cases the essential type of cell is the same. Its morphological characteristics, supravital staining reactions, and (in Case 2) ingestion of erythrocytes prove beyond reasonable doubt that it is related to the large hyaline leucocyte or monocyte.

Reschad and Schilling-Torgau (1913) described a "new leukæmia" characterised by the presence in the blood of numerous cells which were regarded as monocytes by Naegeli and Pappenheim. Their case, in a man aged 33, lasted eight weeks, started with gingivitis, and exhibited rigors, fever, and epistaxis. There was a generalised cutaneous rash consisting of focal accumulations of monocytes and histiocytes, enlargement of the spleen, and free iron in the liver. An ulcer in the large intestine is of interest in that it appears to have been histologically similar to the œsophageal and intestinal ulcers of the present Cases 1 and 2 respectively.

FIG. 5



Thyroid from Case 2. (× 100.)

Dameshek describes two cases and surveys the literature, coming to the conclusion that it contains 18 proven cases up to that date. Merklen and Wolf conclude that monocytic leukæmia is a justifiable term, review the literature, and record a case with 20,500 to 43,000 white blood-cells, which at autopsy showed diffuse proliferation of the reticular tissue of lymph glands, spleen, and marrow. In Hoff's case the total white count was 2500 to 1600, and the differential percentages were similar to those of the present Case 1. The example reported by Bingel in 1916 is admittedly doubtful. Swirtschewskaya records an instance where the leucocytes rose

Though coexisting peritonitis may to some extent explain the variation in the course of the two conditions we are considering, there is, in my opinion, a far more important factor—the time element. I refer to the time which elapses between the onset of the infective process and the diagnosis of its presence. In my experience subphrenic abscess is most frequently met with as a complication of perforated gastric or duodenal ulcer. The operation appears to have been successful and the patient to be on the road to recovery when the temperature begins to swing. As chest complications of a mild nature are common after upper abdominal operations, particularly those of the emergency type, often little importance is attached to this variation in temperature until a day or two has elapsed, in some cases even longer. Examination of the chest then usually shows pleural effusion. Even then the surgeon is often hesitant to diagnose subphrenic abscess, and thus a long period elapses during which the inflammatory process is free to exert its action upon the diaphragm. Added to the hesitancy on the part of the surgeon to diagnose what he fears, but hopes is not present, is the difficulty of being clinically certain that subphrenic abscess is present, and the condition may be missed, in spite of the most careful efforts to detect its presence.

With pyonephrosis, however, the diagnosis is usually swift and certain. There is usually a history of pain in the renal angle and in some cases renal colic. There is in nearly all cases a palpable cystic tumour, pus and blood are commonly present in the urine, and on cystoscopy pus can be seen exuding from the corresponding ureteric orifice.

The explanation of why the particular cases quoted above were complicated by empyema is, in my opinion, to be credited to the time element as represented by the period between the onset and the late diagnosis. In all three cases a more than usually long history of illness is present, and it is to be expected that had operative interference been carried out earlier the empyema would not have developed.

There remains one other reason why pyonephrosis should unusually produce empyema as a complication. This is anatomical. The kidney is surrounded by a tough fibrous capsule which limits the spread of the infection, and this is probably a potent factor in preventing pulmonary complications.

SUMMARY

(1) Cases of pyonephrosis very unusually give rise to severe pulmonary complications, only 5 cases out of a series of 180 being so complicated.

(2) Other cases of subphrenic acute infective processes, notably subphrenic abscess, very often give rise to severe pulmonary complications, 67·44 per cent. being accompanied by effusion of some kind, and 27·9 per cent. by purulent effusion.

(3) The explanation of this apparent inconsistency is probably threefold: (*a*) The long period usually elapsing between the formation of a subphrenic abscess and its detection, as contrasted with the usual early diagnosis of pyonephrosis. (*b*) The upper abdominal peritonitis associated with subphrenic abscess and the resulting immobility of the diaphragm. (*c*) The tough fibrous capsule of the kidney exerting a limiting effect on the spread of infection.

(4) Cases of acute pyonephrosis left untreated for long periods are likely to develop severe intrathoracic complications.

In conclusion, my thanks are due to Mr. Russell Howard, Mr. Hugh Lett, and Prof. Arthur Ellis for permission to publish the details of these cases.

THE CLINICAL SIGNIFICANCE OF THE NERVE-ENDINGS IN THE MESENTERY

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The sensitivity of the mesentery to ordinary mechanical stimuli and its possible rôle in the causation of abdominal pain has recently been brought to the fore largely through the writings of Tyrrell-Gray. He describes (1922) the mesentery as exceedingly sensitive to every kind of stimulus, mechanical, chemical, and thermal, and advances the view that true visceral pain primarily arises from the mesentery, partly by impulses arising in the Pacinian corpuscles. Breslauer has suggested that the impulses which initiate visceral pain do not arise in the intestine but in the mesentery, and in particular in the mesenteric blood-vessels. He observed that areas of the peritoneum which contain large blood-vessels are more sensitive than areas in which no large vessels are present. The sensitivity of the mesentery to ordinary mechanical stimuli has apparently been doubted by many investigators, but the recent work of Morley has finally established this fact. As a result of his observations under local anæsthesia Morley concludes that the mesentery is decidedly sensitive from its root to a point a little distance away from its attachment to the bowel. In another paper (Sheehan) an account is given of the exact distribution and proportion of the Pacinian corpuscles and of other afferent nerve-endings in the mesentery. The clinical significance of the free myelinated nerve-endings and of the fine non-myelinated plexus has already been discussed. In view, however, of the possible significance of the Pacinian corpuscles in the mesentery in regard to the causation of abdominal pain, a short discussion on the views advanced as to the function of these bodies appears important.

FUNCTIONS ATTRIBUTED TO THE PACINIAN CORPUSCLES

First noticed by Vater, professor of anatomy at Wittenburg in 1741, and later fully described by Pacini, an Italian physiologist in Pisa, in 1830, these encapsulated nerve-endings have been the subject of much controversy. After assessing all the known facts concerning them, we find very little firm basis on which to build any true conception of their function. We can perhaps summarise the theories that have been advanced, and the views held as regards them, as follows:—

1. *Touch*—i.e., end-organs for the reception of the sensation of touch. This view was put forward in the early days of the knowledge on sensation, when the discovery by Blix in 1885 of the punctate distribution of sensibility of the skin first led to the belief in the existence of specific end-organs, each subserving a special form of sensibility.

Though the belief in specific end-organs is still supported by many authorities, the view of looking upon the Pacinian corpuscles as special receptors for the sensation of touch is now no longer held. Waterston has made sections and examined microscopically such spots as were known to be sensitive to touch stimuli, and failed to demonstrate the presence of these corpuscles. Furthermore the presence of these bodies lying deeply in the subcutaneous tissues, around the periosteum of bones, and in the mesentery of the cat, where touch stimulation can be obviously excluded, shows conclusively that they cannot be looked upon as agents subserving this function.

sounds were heard. The heart sounds were normal in all areas, but the position of the apex-beat could not be determined.

The urine was dark red with a large amount of deposit; a quarter-volume of albumin was present, and the guaiac test was positive to blood. Naked-eye inspection of the deposit showed pus.

A diagnosis of left pyonephrosis with associated pleural effusion was made and, in view of the serious condition of the patient, drainage of the kidney was determined upon as an immediate measure.

At operation the patient was given a general anæsthetic (A.C.E. and open ether). To confirm the diagnosis a cystoscope was passed. The bladder was very injected and œdematous, especially in the neighbourhood of the left ureteric orifice and trigone. Clear urine was seen issuing from the right orifice, which was contracting rhythmically and at normal frequency. The left ureteric orifice showed the contractions to be less frequent and of longer duration, and from time to time a bead of yellow pus was extruded. The patient was then placed in the right lateral position and the kidney approached by Morris's incision. The parietal tissues were very œdematous. The perirenal fat was almost entirely absent, and the kidney greatly enlarged and pale pink. There was no perinephric suppuration. A trocar and cannula were inserted into the kidney, and 22 ounces of foul-smelling, blood-stained pus was evacuated. On inserting a finger into the pelvis of the kidney several pieces of calculus debris were felt. Removal of the cannula was followed by an immediate brisk hæmorrhage. All attempts to control the bleeding by mattress sutures through the kidney substance were of no avail. Immediate nephrectomy was decided upon, as the hæmorrhage was becoming increasingly severe and the pulse-rate had risen to 140.

The kidney was very adherent to the diaphragm, and during the operation of stripping it there was a sudden gush of pus from above, and a further 15 to 20 ounces drained out through a small rent in the diaphragm. The removal of the kidney was then completed. Drainage of the kidney-pouch was arranged and, as the condition of the patient was now very poor, all thought of rib resection for drainage of the thorax was dismissed as impracticable. A second drainage-tube was consequently passed up through the rent in the diaphragm and sutured in position with its outlet through the wound in the loin. The wound was then closed.

At this time the patient was scarcely alive, respirations being very shallow and rapid, and the pulse imperceptible. Infusion of one pint of intravenous saline was without effect, so it was decided to send out an emergency call for a blood donor. A Group 4 donor was available after two hours, and 800 c.cm. of whole blood with 200 c.cm. of 2 per cent. citrate solution were given into the median basilic vein. The result was immediate, and the patient improved rapidly.

Progress.—Drainage was free for several days, especially from the thoracic tube. The temperature was normal on the second day and the pulse-rate had settled to about 90. Breathing was painless, and by the end of three days the respiration-rate was 18. The tube draining the kidney bed was removed after the third day, but the tube in the thorax continued to drain until the tenth day, when it was removed. Culture of the pus from the kidney showed *Staphylococcus aureus* with *B. proteus*, and that from the pleural cavity grew the same types of organism.

The patient was discharged well on the 27th day. Pathological examination of the kidney showed marked expansion of the pelvis with severe inflammatory changes. There was much phosphatic debris, and several small abscesses were present in the cortical substance of the kidney which had escaped destruction.

THE SECOND CASE

History.—The patient was a woman, aged 34, admitted on Jan. 31st, 1931. For 13 years she had been complaining of pain in the back but no other symptoms. Two years before the pain had begun to get much worse, radiating to the left groin, with occasional attacks of hæmaturia. In the last eight months she had been suffering from severe attacks of giddiness, thirst, and headache. The last menstrual period had occurred six months before admission.

On admission her temperature was normal, her pulse-rate 96, and her respiration-rate 17. She had a mitral facies and cyanosis. The uterus was one inch below the umbilicus, and fœtal parts could be felt. There was a large tumour in the left flank. The heart showed mitral stenosis. The lungs were clear. There was considerable œdema of the feet, and the urine showed pus and one-seventh volume of albumin. The blood-urea was 0·021 per cent. After three weeks in bed the patient was much better and was discharged. A radiogram taken at the time revealed calculi in the left kidney.

On April 10th she was *readmitted* for labour. There was a large swelling in the left flank. Her temperature was 99° and her pulse-rate 80. She had a precipitate labour lasting 20 minutes. The child was premature, weighed 3 lb. 7 oz., was alive, and did well. She was transferred from the obstetric ward to a medical ward on the tenth day. She still had a tumour in the left flank. The temperature was swinging, and her pulse-rate was 100. The chest revealed bronchial breathing over the left lower lobe, and the left base of the lung was dull to percussion. The swelling in the loin, after ten days, began to increase in size, and the skin became reddened over it.

She was then transferred on May 8th to surgical care. An operation was deemed advisable, and on the 9th exploration of the kidney was carried out. A large pyonephrosis was drained, and several calculi withdrawn from the kidney pelvis. The temperature continued to swing and the patient did not respond as well as would be hoped, so on May 31st a further exploration was carried out, when a fresh loculus of pus was released. The temperature continued to swing, and on June 21st the patient died. At *post-mortem examination* the kidney area was more or less clear, whereas the left chest showed a large empyema.

A THIRD CASE

The third example occurred many years ago and was a case of left-sided pyonephrosis which was untreated for 14 days. Perinephric abscess was then diagnosed, and an incision made which drained off much pus from around the kidney. After a week, however, the condition was further diagnosed as pyonephrosis, and a further operation performed for drainage of the kidney itself. The patient was very ill by this time and the possibility of serious pulmonary complication was apparently overlooked. The patient died, and at autopsy a large empyema pleuræ was revealed.

DISCUSSION

In viewing these cases from their pathological aspect, an attempt has been made to comprehend why in these instances the kidney condition should have been complicated by empyema; why the complication is usually rare; and also what bearing these cases have upon other infective processes close to the inferior surface of the diaphragm.

Among the commonest of these latter cases is the condition of subphrenic abscess. During the five years ending 1930, 43 cases of subphrenic abscess were treated in the London Hospital. Of these 67·44 per cent. were complicated by pleural effusion, and in 27·9 per cent. the effusion was purulent. In many of the cases there was direct communication between the subphrenic and pleural collections of pus.

A consideration of the pathology and clinical course of these cases gives the clue to the answer of the first two questions. In both subphrenic abscess and pyonephrosis there is an active infective process close to the inferior surface of the diaphragm. Lymphatic communication through the diaphragm is rich, and consequently the infection can be transmitted easily to the upper surface. This will call forth a corresponding inflammatory reaction in the parietal pleuræ covering the diaphragm and, if the condition beneath the diaphragm be unrelieved, effusion of fluid into the pleural cavity will result. The effect of the inflammatory process above the diaphragm will, however, be heightened if there is any factor which will tend to limit the movements of this muscle, and in subphrenic abscess this factor is present—namely, peritonitis. With an abscess in the upper part of the peritoneal cavity abdominal respiration is decreased or non-existent, and hence we already have one explanation why pleural effusion and its later manifestation, empyema, should be more prevalent in cases of subphrenic abscess than in pyonephrosis. Where there is direct communication between the subphrenic abscess and the pleural cavity the empyema is nearly always preceded by a simple pleural effusion before the more serious and usually fatal complication supervenes.

4. Periosteum and interosseus membranes.
5. Serous membranes—e.g., pleura, pericardium, synovial membrane, mesentery and mesocolon, parietal peritoneum, and in peritoneum over bladder.
6. Genital organs—glans penis.
7. In the capsule and interstitial tissue of certain organs, notably, pancreas, lymphatic glands, ovary and prostate, thyroid and parathyroid.

In an investigation involving the examination of the pancreas in man Ceelen found the Pacinian corpuscles in 89 per cent. of cases. They varied widely in number and distribution, and were most numerous on the posterior aspect of the head. Ceelen described them directly in relation to the parenchymatous tissue.

They do not exist only in mammalia; they are also to be found in reptiles and in birds in the beak and tongue (corpuscles of Herbst); but they are present in much greater frequency in mammalia. The prevailing opinion seems to be that they are *not* present in amphibia. Now it is clear that any function or functions which we may assign to the Pacinian corpuscle must necessarily be in accordance with this wide distribution in the body.

A second point to be emphasised is that all the well-known forms of corpuscular end-organs are built upon a uniform plan, consisting of an outer lamellated connective tissue capsule with a core of softer material through which the nerve-axon runs to its final arborescence. Between the largest Pacinian corpuscles that are plainly visible to the naked eye, and those of Golgi-Mazzoni, which can only be detected with the microscope, there is an uninterrupted series of intermediate or transitional forms. And from the so-called genital corpuscles there is a further gradual transition to the more elaborate corpuscles as described by Golgi and Mazzoni. Thus we have to remember in ascribing any particular function to one type of end-organ that there are all grades of corpuscles between the typical Pacinian and the other similar lamellated corpuscles. This point was very clearly demonstrated in the previous work, where the corpuscular end-organs in the mesentery varied so markedly in size and in thickness of lamellation.

And lastly, previous work has demonstrated that the nerve-endings in the Pacinian corpuscles, at least in the mesentery of the cat, are splanchnic in origin—i.e., are presumably part of the sympathetic system. It is of course questionable whether this can be extended to all the Pacinian corpuscles in the body, but the fact that groups of these corpuscles have been dissected along the finer branches of the radial and median nerves is no argument against the view, as the sympathetic fibres are known to supply practically every tissue in the body, and to reach them via the main somatic nerve-trunks. Woollard, however, finds that the nerve-endings in Pacinian bodies lying close to blood-vessels do not degenerate following sympathetic denervation of the lower extremity.

It is of interest in regard to this question that in the lower limbs of two patients upon whom bilateral lumbar sympathectomy had been performed some months previously, it was found impossible to stain the nerve-axon in the corpuscles in the ball of the foot, although the nerve-fibres in the proximity stained clearly with silver. Although more light is required on this question of sympathetic afferents, it seems apparent, from the present state of our knowledge, that any function of the Pacinian bodies, at any rate in the mesentery, must inevitably be intimately associated with the sympathetic system.

With these aspects of the problem before us can we form any truer conception of the function of these bodies?

THE VASCULAR SUPPLY OF THE PACINIAN CORPUSCLE

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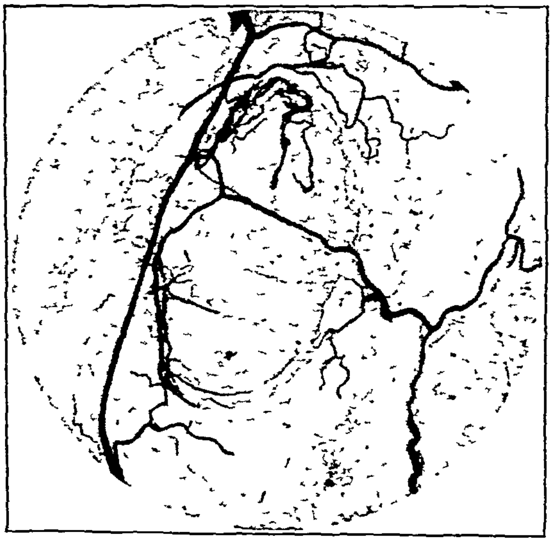

Section of a Pacinian corpuscle showing the vascular supply.

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It is interesting in view of these findings to look back to the work of Ramström. He showed (1908 *a*) that Pacinian corpuscles occurred in the parietal peritoneum, and he further demonstrated (1908 *b*) in a series of operations under local anæsthesia that the parietal peritoneum is insensitive to pressure and thermal stimuli. This observation was confirmed by Capps and Coleman in 1922. Ramström naturally concluded that Pacinian corpuscles were in no way related to the function of pressure recognition, a view which, he states, is quite untenable with his clinical findings.

5. Ceelen in 1912 gave a review of a hundred human post-mortems with special reference to the presence of Pacinian corpuscles in the abdomen. He suggested some possible trophic function associated with the growth of the body, the corpuscles possibly disappearing later in life like the thymus. This he based on the rather insufficient evidence that in 11 per cent. of the cases he was unable to find any Pacinian corpuscles, but in every infant and 95 per cent. of the children examined they were present. It surely seems more feasible to suppose that the corpuscles are more easily found and identified in the infants and young children, where the view is not so obscured by the large accumulations of fat, commonly discovered in the mesentery and omentum of elderly subjects. He also observed that where the corpuscles occurred in very large numbers the lymphatic apparatus appeared swollen, and in some cases he found the Pacinian corpuscles themselves œdematous, a watery fluid lying between the lamellæ.

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DISTRIBUTION AND STRUCTURE OF THE PACINIAN BODIES

This formidable list of conflicting views and theories serves to show how little is really known regarding the function of these corpuscles. One or two general and more essential aspects of the problem seem important. In the first place, where are Pacinian corpuscles to be found elsewhere in the body? We can tabulate the distribution in the body as follows:—

1. Deep layers of the skin, especially fingers and toes.
2. Tendons and sheaths of muscles.
3. Near joints, especially flexor aspects.

4. Periosteum and interosseus membranes.
5. Serous membranes—e.g., pleura, pericardium, synovial membrane, mesentery and mesocolon, parietal peritoneum, and in peritoneum over bladder.
6. Genital organs—glans penis.
7. In the capsule and interstitial tissue of certain organs, notably, pancreas, lymphatic glands, ovary and prostate, thyroid and parathyroid.

In an investigation involving the examination of the pancreas in man Ceelen found the Pacinian corpuscles in 89 per cent. of cases. They varied widely in number and distribution, and were most numerous on the posterior aspect of the head. Ceelen described them directly in relation to the parenchymatous tissue.

They do not exist only in mammalia; they are also to be found in reptiles and in birds in the beak and tongue (corpuscles of Herbst); but they are present in much greater frequency in mammalia. The prevailing opinion seems to be that they are *not* present in amphibia. Now it is clear that any function or functions which we may assign to the Pacinian corpuscle must necessarily be in accordance with this wide distribution in the body.

A second point to be emphasised is that all the well-known forms of corpuscular end-organs are built upon a uniform plan, consisting of an outer lamellated connective tissue capsule with a core of softer material through which the nerve-axon runs to its final arborescence. Between the largest Pacinian corpuscles that are plainly visible to the naked eye, and those of Golgi-Mazzoni, which can only be detected with the microscope, there is an uninterrupted series of intermediate or transitional forms. And from the so-called genital corpuscles there is a further gradual transition to the more elaborate corpuscles as described by Golgi and Mazzoni. Thus we have to remember in ascribing any particular function to one type of end-organ that there are all grades of corpuscles between the typical Pacinian and the other similar lamellated corpuscles. This point was very clearly demonstrated in the previous work, where the corpuscular end-organs in the mesentery varied so markedly in size and in thickness of lamellation.

And lastly, previous work has demonstrated that the nerve-endings in the Pacinian corpuscles, at least in the mesentery of the cat, are splanchnic in origin—i.e., are presumably part of the sympathetic system. It is of course questionable whether this can be extended to all the Pacinian corpuscles in the body, but the fact that groups of these corpuscles have been dissected along the finer branches of the radial and median nerves is no argument against the view, as the sympathetic fibres are known to supply practically every tissue in the body, and to reach them via the main somatic nerve-trunks. Woollard, however, finds that the nerve-endings in Pacinian bodies lying close to blood-vessels do not degenerate following sympathetic denervation of the lower extremity.

It is of interest in regard to this question that in the lower limbs of two patients upon whom bilateral lumbar sympathectomy had been performed some months previously, it was found impossible to stain the nerve-axon in the corpuscles in the ball of the foot, although the nerve-fibres in the proximity stained clearly with silver. Although more light is required on this question of sympathetic afferents, it seems apparent, from the present state of our knowledge, that any function of the Pacinian bodies, at any rate in the mesentery, must inevitably be intimately associated with the sympathetic system.

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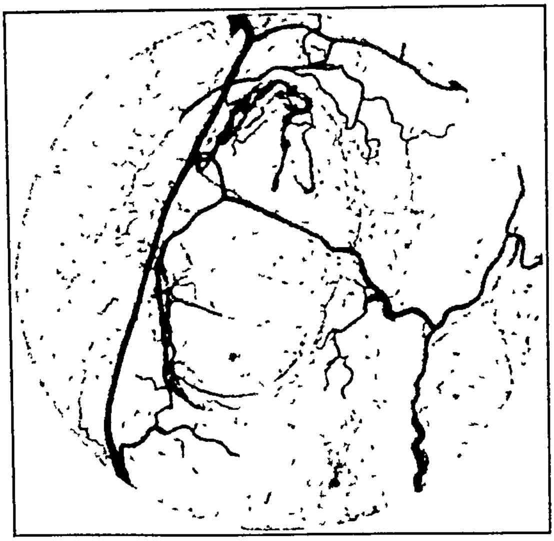

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THE HEART AFTER DIPHTHERIA

By Stanley Alstead, M.D. Liverp.

EXTRA DISPENSARY PHYSICIAN, WESTERN INFIRMARY, GLASGOW; POLLOK LECTURER IN MATERIA MEDICA AND THERAPEUTICS IN THE UNIVERSITY OF GLASGOW

Franklin White and H. H. Smith[1] examined nearly 1000 patients recently discharged from hospital convalescent after diphtheria. They found that 75 per cent. still showed evidence of myocardial defects and relative insufficiency of the mitral valve, while about one-third of the cases (not including babies) suffered from tachycardia and irregularity of the pulse. They pointed out that such cardiac abnormalities were not commonly found after scarlet fever, measles, typhoid, or pneumonia.

Some 78 cases of convalescent diphtheria were described; all of them had signs of heart damage when they left the isolation hospital, 29 of them having been "very severe" cases and the remainder "moderate" or "mild" cases. Care was taken to exclude from the series any patient who gave a history of other ætiological factors such as rheumatism. Most of the cases were found to have murmurs and some degree of cardiac enlargement. Five had a persistently rapid heart-rate, and in four cases there was enlargement of the heart out of proportion to the other signs. After repeated observation over a period of from 2 to 12 months they were able to state that the majority of these cases showed a steady improvement in the condition of the heart. About a quarter of the cases, however, were still abnormal at the end of four months from the onset of the disease, but 6 of these had recovered when re-examined a few months later. Of the remaining 13, 5 were kept under observation for five months, 4 for six months, and 2 for eight months before recovery was complete.

The persistence of signs as late as 11 months after diphtheria led them to believe that in some cases the defects might be permanent.

Hoskin[2] has described a smaller series of cases convalescent after diphtheria in which electrocardiographic records were also obtained. The abnormalities noted were: (*a*) increased heart-rate; (*b*) symptoms of cardiac insufficiency in half the cases and diminished cardiac reserve; (*c*) presence of heart abnormalities in almost every case on physical examination; and (*d*) changes in the electrocardiogram, notably "slurring" of the Q R S complex.

Although there is general agreement that cardiac abnormalities may persist up to about a year after diphtheria, opinions vary as to the possibility of later after-effects from this disease. Duckett Jones and P. D. White[3] examined 100 patients who had suffered from diphtheria five to eight years previously, and their results are summarised in their own words as follows: "*No evidence of organic heart disease was found by history, physical examination, routine electrocardiogram or X ray (when needed). There were a number of patients showing functional systolic murmurs, sinus arrhythmia, third heart sounds, and two exhibiting premature beats.*" Furthermore, the authors cast some doubt upon the positive findings of previous workers on the grounds that their criteria of abnormality were probably unsound. Again, Sutherland[4] states definitely that after excluding rheumatism and other common ætiological factors there is nothing to support the suggestion that diphtheria has a lasting effect upon the heart. On the other hand, many experienced observers consider that diphtheria may be the ætiological factor responsible for heart disease appearing in later years. Rolleston[5] states that "*In view of the liability of the toxins of diphtheria to affect the myocardium it is probable that diphtheria may be responsible for many cases of permanent cardiac weakness in patients who recover. The writer (Rolleston) has often met with examples of cardiac insufficiency in adults who dated their symptoms from an attack of diphtheria many years ago.*" Recently, Butler and Levine[6] published some interesting observations on the ætiology of heart-block, showing that in a group of 20 cases of heart-block more than half gave a history of diphtheria previously—i.e., and incidence three times as great as in a large group of control cases.

While the frequency of post-diphtheritic heart complications is a matter of controversy, there can be no doubt that proved cases do occur occasionally. Parkinson[7] described the "first undoubted case" of auricular fibrillation supervening upon heart-block due to diphtheria. A case of permanent bradycardia has been recorded by W. D. Reid.[8] Auricular flutter as a complication five weeks after diphtheria has been reported by O'Donovan.[9] Jones and White[3] mention a case of high-grade heart-block which developed on the third day of diphtheria and became permanent, and it was this case that prompted these workers to undertake the investigations to which reference has been made above. The cases which are described in what follows were examined for much the same reason—namely, the appearance of two patients who had sustained permanent damage to their hearts owing to diphtheria; these cases have been described elsewhere.[10]

THE PRESENT INQUIRY

Nearly two hundred patients were interviewed and a history obtained from each one with particular reference to the following facts: (1) Age. (2) Date when diphtheria was contracted. (3) Previous illnesses (especially for such common ætiological factors as rheumatism and chorea). (4) Any cardiac symptoms or change in general health since diphtheria. A routine examination of the heart, arteries, and pulse was then made, and an electrocardiogram was obtained, using a Cambridge Instrument Company electrocardiograph fitted with immersion electrodes. Sphygmomanometer readings were not taken, as the psychical disturbance usually present on making a

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(*Continued from previous page*)

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this manner, and the corpuscles in the mesentery examined.

A very striking feature became evident immediately, that the Pacinian corpuscle possessed two sources of blood-supply. The first consisted in a vascular plexus surrounding the external aspect of the capsule. This was present in every case, and in the majority a series of vascular loops or bands could be discerned encircling the body of the corpuscle transversely to its long axis (see Figure). In addition, each Pacinian body received a central vessel. This ran into the corpuscle with the main afferent nerve, often as far as the central core, but contrary to most descriptions it always appeared to form vascular loops (more often single) and twist backwards to emerge from the corpuscle at the same pole. Frequently a second, but usually smaller, vascular loop could be seen penetrating the opposite pole, but in no case, no matter how thin the injection mass, could any connexion be established through the corpuscle between the two vascular loops. This was the case when the injection had distended even the finest capillaries visible under the microscope. Not every corpuscle possessed a vascular loop at each pole. These two sources of blood-supply, the capsular and central, occasionally arose together off the same vessel, but more frequently issued from quite different arterial branches. From these findings it became evident that there must be some definite association, some interrelation between the blood vascular system and these sensory nerve-endings, for it cannot be supposed that these small bodies would require such an extensive blood-supply purely for their own nutrition.

THEIR FUNCTION

The evidence before us in regard to the function of the Vater-Pacinian corpuscles can therefore be briefly summarised as follows:—

1. The histological structure of these encapsulated nerve-endings and their intimate relationship, at least in the mesentery, with the sympathetic nervous system.
2. The wide distribution of these corpuscles throughout the body.
3. Their complex vascular supply, apparently far in excess of their own nutritional requirements.
4. The results of the critical experiments of Adrian and Ulmrath, an immediate discharge of impulses being recorded when joint movement or pressure stimuli were applied directly to an isolated group of Pacinian corpuscles.

It is difficult from our present knowledge to come to any final conclusion as to the function of these bodies. The theory that the impulses originating in Pacinian corpuscles may cause reflex contraction and dilatation of blood-vessels still leaves unanswered the question of the nature of the adequate stimulus required to give rise to an impulse in the Pacinian body. The explanation is probably to be found in the results of Adrian and Ulmrath's work, pressure at once suggesting itself as the most probable factor. By some such interpretation is it possible to correlate the two prevailing views as to the function of these end-organs?

But such an explanation does not quite answer all the aspects of the problem. Pressure cannot account for the stimulation of corpuscles buried deeply in the tissues and lying in the posterior abdominal wall. Tension on the root of the mesentery is the most obvious cause here, stimulation of the afferent fibres of the splanchnic nerves being caused presumably through the nerve-endings in the Pacinian bodies. Extending this view to the corpuscles situated elsewhere in the body, it is interesting to note that they have been found, in addition to the root of the mesentery, on the peritoneum covering the bladder, on the pudic nerves in the penis and clitoris, on the nerve-fibres around the nipple, in tendons and ligaments, and in relation to joints, all situations where pulling or stretching (both resulting in tension) play an important part. It is difficult to dissociate the two methods of stimulation, pressure and traction, and von Frey and Kriessow (quoted by Greenwood) have found that the sensation experienced in pulling and pushing appeared to be identical, provided the magnitude of the pull in one case was equal to that of the push in the other; that is to say, the end-organ is excited by a change in the existing pressure relations whether the change be positive or negative, increase or decrease.

Secondly, it is a possibility that the change in blood pressure may in some cases be the *cause* and not the result of impulses arising in Pacinian bodies. Sherrington, in 1900, showed that a condition of the blood or lymph could be easily conceived to not only affect the nerve-centres centrally, but also by peripheral changes to excite sensory nerve-endings. A deficiency of lymph might certainly induce a relaxation of the structures to which afferent nerve-fibres are related—e.g., capsules of Pacini. This interpretation would give us some explanation for the "sinking feeling" and vague sensation, bordering on pain, and obviously sympathetic in origin, which accompany all conditions of shock, a period of profound capillary dilatation. It would also explain the conscious awareness that we experience during over-activity of any gland. Luciani points this out clearly. He says:

> "Normally we have no clear and distinct consciousness of the functions of the internal organs and tissues, but we have a dull and obscure knowledge—i.e., an incessant awareness of our body termed 'the fundamental sense of existence.' In the state of perfect health this remains below the threshold of consciousness, and is prevented from becoming a distinct sensation with specific localisation. But when it reaches a certain intensity it is perceived as a vague sense of general well-being or the reverse. These are transmitted by the afferent nerves of the sympathetic system."

Finally, what is the meaning of the complex-lamellated capsule? The finding of a nerve-fibre running straight through a corpuscle without termination, seems to give us a possible explanation. The lamellæ of the capsule can be seen in any section to be continuous with the neurilemmal sheath of the issuing nerve; the entire capsule can thus be looked upon as an enlargement of the neurilemma to act no doubt as a "shock absorber." In most cases this is arranged around the delicate nerve-ending, but in certain cases, in order possibly to ensure against slight stimuli, causing profound changes in arterial pressure and blood volume, a double "shock absorber" is included in the circuit, and the nerve-fibre can be seen traversing two adjacent corpuscles before terminating.

It is impossible at this stage to come to any more definite opinion as to the function of the Vater-Pacinian corpuscles. It appears from a study of the structure and distribution of these bodies that their function is in some reflex manner related to the contraction and dilatation of blood-vessels, and that the adequate stimulus for the nerve-ending is pressure or traction. It is hoped that further light will be thrown on the problem in the near future.

My sincere thanks are due to Prof. J. S. B. Stopford, under whose direction this work has been done; and to Prof. E. D. Telford and Prof. Stopford for permission to use the amputated limbs mentioned above.

(*Continued at foot of opposite page*)

cases and the control cases with regard to this characteristic.

CONCLUSIONS

From this comparison of 150 cases having a history of diphtheria with 100 cases having no history of the disease, it is at once evident that there is nothing to suggest the occurrence of gross cardiac lesions as the result of a previous attack of diphtheria. Age-grouping was therefore considered unnecessary, and although the number of cases in the two groups was unequal the average ages were used. The difference of two years between the average ages is mainly accounted for by a small group of young adults who were examined as "post-diphtheritic heart" cases.

—	Diphtheria (150 cases).	Controls (100 cases).
Average age	14 years.	12 years.
Cases excluded for other ætiological factors	4	0
Clinical evidence of valvular incompetence	5	1
P–R interval of 0·2 sec. or over ..	4	2
Intraventricular block	0	0
Splintering of R in leads I. or II. ..	9	13
Negative or iso-electric T waves in lead III.	90	30
Bizarre Q R S in lead III... ..	42	39
Ventricular preponderance	8	11

In a study of the electrocardiogram during the acute phase of diphtheria[11] it was often found that the T wave in lead III. varied considerably during the course of the disease, and a patient might apparently recover clinically and functionally before the T wave in lead III. of the electrocardiogram became positive. This observation was made on an independent group of cases, but in view of the findings in the present series the question is raised as to how long such T wave changes might persist after diphtheria. It is widely accepted, however, that inversion of the T wave in lead III. is of no pathological significance, and whatever may be the cause of an increased frequency of this feature in persons who have had diphtheria, there can be no doubt that there is no coexistent clinical abnormality.

I am indebted to Dr. Claude Rundle, the medical superintendent of Liverpool City Hospitals for Infectious Diseases, for allowing free access to all the hospital registers and case-records for the past ten years. Dr. E. Noble Chamberlain, senior honorary assistant physician at the Royal Southern Hospital, Liverpool, kindly gave assistance in reporting on the electrocardiographic records, and the X ray department of the hospital carried out the photographic work for this part of the investigations. For help in the statistical analysis of the records I am grateful to Mr. John H. Smith, assistant lecturer in the mathematics department of the University of Glasgow.

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Clinical and Laboratory Notes

OBSERVATIONS ON THE CHEMISTRY OF THE LIQUOR AMNII *

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THE following short series of chemical examinations of the liquor amnii was carried out in collaboration with Mr. W. E. Barnie Adshead, hon. assistant obstetrical officer to the Queen's Hospital, Birmingham.

Except in one fatal case of pneumonia, in which the liquor amnii was obtained from the gravid uterus at autopsy, a subtotal hysterectomy was performed on each of the patients in this series, and the liquor amnii was withdrawn from the intact uterus as soon as possible after the removal of that organ from the body. Each uterus was sent directly from the operating theatre to the laboratory, where I withdrew as much of the fluid as I could obtain by aspiration with a sterile needle and syringe, after searing the surface of the organ. The chemical examinations were made upon the fluid very shortly after its removal.

The papers that I have been able to consult do not contain much detailed information about the chemical composition of the normal liquor amnii, and I have not found any reference to the chemistry of the fluid in the presence of maternal disease.

De Lee[1] gives the reaction of the liquor amnii as faintly alkaline or neutral, and the freezing-point as slightly higher than that of the maternal blood. Sandmeyer found 0·22 per cent. of albumin present, comprising serum-albumin, globulin, and an ovo-vitelline-like substance. The salts of the liquor amnii are present in about the same proportions as the salts in the blood-serum—i.e., 0·5 per cent. They are the chlorides, phosphates, sulphates, and carbonates of sodium and calcium, with very little potassium. The urea content ranges from 0·02 to 0·4 per cent., and increases towards the end of pregnancy.

Fairbairn[2] states that the normal liquor amnii is a slightly turbid, straw-coloured fluid, with a specific gravity of 1002 to 1020, and a faintly alkaline reaction. It contains a variable amount of albumin (6 to 8 parts per 1000, Esbach); urea (usually in very small quantity), creatin, and salts. Sugar is said to be present in the liquor amnii of diabetic mothers.

Eden[3] gives the following details: a clear, pale fluid of low specific gravity; albumin, 0·19 per cent.; inorganic salts, 0·59 per cent.; extractives, 0·81 per cent. The amount of albumin may reach 10 per cent. in the early months of pregnancy. The most important extractive is urea, which is present in traces from the sixth week onwards. Glucose may be found in cases of maternal diabetes.

In the accompanying Table all the figures for the various chemical estimations represent mg. per cent. The method of estimation is included in the Table, because different methods of estimation may yield different values when performed in parallel by the same worker. It is therefore necessary to state the method of estimation used in any series of biochemical investigations in order to make the work of value for comparative purposes.

The reaction and the specific gravity of the fluids examined conform to the accepted values for the normal liquor amnii. In seven out of the eight fluids tested glucose was present in estimable quantity, and in one fluid the sugar content lay within the normal range of the blood-sugar. It is not possible to express an opinion upon the relationship of this comparatively high sugar content in the liquor amnii to the clinical condition, especially in the absence of a coincident blood-sugar estimation, but the finding

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* From the Biochemical Laboratory of the Queen's Hospital, Birmingham.

single examination in a child was considered sufficient to render such readings valueless.

A considerable number of cases were excluded because of (1) a history of recent febrile illness—e.g., common cold or tonsillitis, (2) rheumatism or chorea, or (3) doubtful evidence of diphtheria on reference to the notes of the patient when in the isolation hospital. Thus the number of cases was reduced to about 150. These "patients" had had diphtheria from one to ten years before the time of re-examination, and though the majority of them were children and young people, a few adults were also included.

The following electrocardiographic information was obtained in each case to supplement the clinical data mentioned above: (1) P–R interval. (2) Q R S interval. (3) R–T interval. (4) Ventricular preponderance. (5) Splitting of the R wave in leads I. or II. (6) Progressive flattening of the T wave from lead I. to lead III. (7) Negative or iso-electric T wave in lead III. (8) Abnormality of the P wave in any lead. (9) Bizarre Q R S in lead III. (10) Large T waves in leads I. or II.

OBSERVATIONS ON THE DATA

1. As already stated above, the great majority of the patients were children, the average age being 14 years.

2. Rheumatism and chorea were the only ætiological factors taken into consideration. Ten of the patients gave some kind of history of these diseases, but only four were considered to be definite enough to be excluded on these grounds.

3. A history of cardiac abnormalities during the acute stage of diphtheria was remarkably rare, but allowance must be made for the fact that only the patients who survived the disease were examined, and many cases in which there had been a greater possibility of permanent cardiac damage find no place in the series. There were 21 cases (14 per cent.) which had a history of clinical abnormalities in the heart during diphtheria. On analysis it was found that only two of these had any symptoms or signs of a cardiac lesion on re-examination. Three of the cases showed splitting of the R wave in leads other than lead III., and two were characterised by irregularity of the P wave. All the measurements were within normal limits, and the P–R interval was always well under 0·2 sec. Vagaries of the T wave and the Q R S complex in lead III. were frequent, and further reference will be made to this below.

4. The following patients, eight in number, presented signs or symptoms suggestive of cardiac abnormality:—

No. 9.—Heart not enlarged. Heart sounds normal except for duplication of the second pulmonary sound. Mitral systolic bruit conducted towards the axilla; basal systolic bruit not conducted.

No. 29.—Heart not enlarged. Sounds normal; aortic second sound duplicated. Soft, blowing, mitral systolic bruit conducted towards the axilla.

No. 31.—Doubtful case; no abnormality except a localised aortic systolic bruit.

No. 35.—Heart normal in size. Heart sounds normal. Mitral systolic bruit conducted appreciably towards the axilla.

No. 62.—Size of heart and character of the sounds normal. Mitral systolic bruit conducted about 2 inches towards the axilla; basal systolic bruit not conducted to the neck.

No. 71.—Heart sounds and size of heart normal. Mitral systolic bruit conducted about 3 inches towards the axilla.

No. 90.—Heart rather large for a boy of 12 years, but possibly within normal limits. Excessive cardiac thrust and faint systolic thrill palpable. First mitral sound accentuated; a mitral systolic bruit present, but not conducted appreciably towards the axilla.

No. 141.—No abnormality, but extrasystoles and a mitral systolic murmur not conducted to the axilla.

Omitting Cases 31 and 141, where the cardiac abnormality was of doubtful importance, it was found on referring to the detailed analysis that in none of these cases was there a history of rheumatism or other ætiological factors, and in only one case (No. 62) was any cardiac abnormality mentioned during diphtheria. The evidence points, then, to a greater or lesser degree of mitral incompetence in five cases—i.e., 3·3 per cent. of the series. The electrocardiograms were for the most part normal, except that Cases 9 and 141 showed a split R wave in significant leads. If mitral incompetence was present in this group of five cases it was evidently fully compensated in each case, for no history of cardiac insufficiency was obtained in any of them, and with the exception of one case there was no appreciable enlargement of the heart.

5. The P–R interval was remarkably constant. A detailed analysis showed that the vast majority of the cases had a P–R interval of about 0·14 sec. If 0·2 sec. be taken arbitrarily as the maximum normal reading for this interval, it can be said that the series does not show an example of delayed conduction, four cases reaching this limit of normality—Cases 17, 35, 61, and 140; the heart-rate in these cases was 80, 65, 120, and 95 beats per minute respectively. The minimum P–R interval was in Case 77 and measured 0·06 sec. when the heart-rate was 90 per minute, and a similar case was No. 38, with a P–R interval of 0·08 sec., the heart-rate being 100 per minute.

6. The character of the Q R S complex in this series showed the complete absence of any evidence of intraventricular block, though it is reasonably certain that this phenomenon was present in a considerable proportion of the cases during the acute stage of the disease. The average duration of this interval was about 0·05 sec., though the limits were 0·03 sec. in one case (No. 77), with a rate of 90 per minute, and a maximum reading of 0·08 sec., which was found in Case 19, with a heart-rate of 78 per minute.

7. The R–T interval was more variable than were the other measurements given above. The reading was in the region of 0·3 sec. for the majority of the cases. There was, however, a considerable difference in the limits; the minimum (Case 77) being 0·14 sec. and the maximum (Case 154) was 0·4 sec. Thus the R–T interval was found to be within normal limits, though in two cases in which the interval amounted to 0·4 sec. the arbitrary maximum for the normal duration of this phase was reached.

The remaining characteristics contained in the detailed analysis are usually regarded as variations within normal limits, but they have been tabulated for comparison with a series in which neither diphtheria nor any other ætiological factor could be elicited in the histories. (See Table.)

Applying the χ^2 test for independence it can be shown that the differences between the numbers is attributable to chance factors except in regard to the negative or iso-electric T wave in lead III. In this case the probability of the results arising due to chance is considerably less than 1 in 100, which for this form of analysis indicates definitely a significant difference between the two figures. As the number of cases where the phenomenon is shown is adequate, this indicates a real difference between the diphtheria

On examination the left knee seemed to be very swollen and tender with limitation of movement in all directions. Temperature 101° F., pulse-rate 120, respirations 30. Hot fomentations were applied every four hours to the knee. A skiagram showed no bony changes of the knee-joint. On Sept. 7th an incision was made over the swelling, which proved to be a suppurative bursitis, and pus was evacuated and a drain inserted. By the 22nd the wound was healed.

On Oct. 4th she was *readmitted* with very severe pain in the left knee and was unable to extend it; since her discharge she was said to have been jaundiced several times. On examination the left knee seemed to be swollen, and was warmer than the other knee, and limitation of movements, especially those of flexion and extension, was marked. A skiagram showed mottled rarefaction of the patella with ? periosteal reaction. The pain disappeared in a few hours. Temperature 101° F., pulse-rate 120, respirations 30. On Oct. 11th an incision was made down to the periosteum, which was retracted, and three holes were drilled in the upper part of the patella, which was soft and necrotic in parts. During this procedure fluid was seen to exude from the joint. The wound was packed with paraffin and flavine gauze. Bacteriological examination revealed a growth of *Staphylococcus albus* on culture. On Nov. 4th the child knocked her knee and profuse hæmorrhage occurred from the wound, which had practically healed. By the 12th the local condition had cleared up completely, without any stiffness of the joint. A skiagram showed some sclerosis of bone in the patella.

The chief features of interest in this case seem to be: (1) There was no history of previous exanthemata or injury. (2) The condition started as a suppurative bursitis, which apparently cleared up but either predisposed to succeeding infection or some of the causative bacteria remained in a quiescent state and later came into a state of activity. (3) Since the operation there has been no indication of involvement of the knee-joint, although *Staphylococcus albus* was obtained from the swab which was taken from the knee-joint.

I have to thank Mr. W. E. Tucker for permission to publish this report.

AN UNUSUAL JARISCH-HERXHEIMER REACTION

ACUTE SPINAL THROMBOSIS OCCURRING DURING THE TREATMENT OF PRIMARY SYPHILIS WITH NOVARSENOBILLON

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A SURVEY of the recorded examples of the Jarisch-Herxheimer reaction has failed to reveal a case similar to the following.

A male patient, aged 30, unmarried, attended the special department at the Metropolitan Hospital on Nov. 27th, 1931, on account of a sore on the penis for three weeks. There was a history of risk of infection 12 weeks previously in the West Indies. A meatal chancre and enlarged glands in both inguinal regions were found. Spirochætes were demonstrated by Dr. H. C. Lucey in serous discharge from the chancre. The Wassermann reaction of the blood was negative.

At his first attendance novarsenobillon (0·45 g.) was given intravenously, and bismuth cream (2 c.cm.) intramuscularly without ill-effects. One week later these doses were repeated, and on waking the next morning the patient noticed weakness in both legs, and during the day developed difficulty in starting micturition. Both these symptoms rapidly increased in severity and within 24 hours the patient was unable to move his legs, and there was a constant dribble of urine. Four days after the onset of the symptoms (Dec. 11th) he was brought up to the hospital and admitted under the care of Dr. C. Worster-Drought.

On admission there were signs of a transverse lesion of the spinal cord at the level of the fourth thoracic segment. Both rectus abdominis muscles were completely paralysed, the bladder was distended up to the level of the umbilicus, there was retention-overflow of urine, and incontinence of fæces. The lower limbs were completely paralysed, the knee-jerks were just present on the right side and absent on the left side. The plantar responses were extensor on both sides. There was loss to pain, thermal, and light-tactile sensibility below the level of the fourth dorsal segment, above which no abnormal physical signs were detected.

Lumbar puncture was performed. The cerebrospinal fluid was clear and under reduced pressure. Dr. Lucey reported as follows:—"Appearance: clear, colourless, contains no coagulum. Cells: 1 per c.mm. Total protein: 18 mg. per 100 c.cm. Wassermann reaction: negative."

A diagnosis was made of acute specific spinal thrombosis precipitated by the administration of novarsenobillon. It was decided to continue the course of novarsenobillon up to a total dose of 4·5 g., in addition to which potassium iodide grs. 50 was given three times daily by mouth, and collosol mercury 5 c.cm. intramuscularly at weekly intervals.

Recovery ensued as follows:—

Two weeks after admission the level of sensory loss began to be slightly lower. There was some return of tone in the recti muscles. Daily massage to the lower limbs was instituted. Three weeks after admission the sensory level was at the first lumbar segment. For the first four weeks the bladder had to be drained by a catheter. The urine became heavily infected, and this was cleared by the administration of neotropine grs. 3 three times daily by mouth.

Four weeks after admission the recti muscles were normal, the abdominal reflexes were present, and urine was passed naturally after some difficulty in starting. There was slight return of power in the legs, which were markedly spastic, the knee-jerks being very brisk, the ankle-jerks present, and the plantar responses still extensor.

Five weeks after admission micturition and defæcation were almost normal. The muscular power of the legs was rapidly returning. The knee- and ankle-jerks were all exaggerated; the plantar responses were extensor, and bilateral sustained ankle-clonus was present. The sensory loss was now down to the level of the fourth lumbar segment.

After six weeks in bed the patient was allowed to get up, the legs being very stiff at first, but walking gradually improved up to the end of the twelfth week after admission, when he was discharged.

Lumbar puncture was repeated before his discharge, and the Wassermann reaction of the cerebro-spinal fluid was again found to be negative. The blood Wassermann reaction was also negative. On discharge (March 2nd, 1932) the patient walked with the aid of a stick with a lightly spastic gait. The knee- and ankle-jerks were all brisk, the plantar responses extensor, and ankle-clonus was present on the right side. There was slight sensory loss to pain at the first sacral segment.

Treatment with potassium iodide (grs. 50 t.d.s.) was continued, and, on examination four months after discharge, the patient was walking well without a stick. There was very slight weakness and spasticity of the right leg. The knee- and ankle-jerks were still exaggerated, more on the right side, but the plantar responses were flexor, with no ankle-clonus. There was no sensory loss. Slight hesitancy of micturition was still present.

The Jarisch-Herxheimer reaction has been attributed either to the effect of endotoxins liberated from spirochætes destroyed by a specific spirillicidal agent, or to stimulation of the spirochætes by an inadequate dose of the drug. In several cases the reaction has been observed in the cranial nerves, the optic, facial, and auditory nerves being affected. Wechselmann[1] has described a case in which facial paresis occurred two hours after an injection of salvarsan. No case of acute spinal thrombosis or of acute transverse myelitis occurring as a Jarisch-Herxheimer reaction appears to have been recorded.

My grateful acknowledgments are due to Dr. Worster-Drought for permission to publish this case, and to Dr. Lucey, who performed the pathological investigations.

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[1] Die Behandlung der Syphilis, Berlin, 1911.

CHEMICAL ESTIMATIONS OF LIQUOR AMNII

Age	35	28	37	34	44	35	39	23	35
Maternal disease	Phthisis.	Phthisis.	Phthisis.	Renal insufficiency.	Albuminuria of pregnancy.	Epilepsy	Puerperal insanity.	Mitral stenosis.	Pneumonia.
Age of fœtus in months	4	5½	5	2½	4	5½	3	4½	6
Physical characters of fluid	Clear, yellow.	Turbid, deep brown.	Clear, yellow.	Clear, yellow.	Clear, yellow.	Clear, pale yellow.	Clear, pale yellow.	Clear, pale yellow.	Clear, yellow.
Reaction	Neut.	Alk.	Alk.	Alk.	Alk.	Alk.	Alk.	Alk.	Alk.
Specific gravity	1009	1011	1007	—	1006	1010	—	1007	1008
Sugar (Folin-Wu)	Trace.	22	33	43	40	—	91	40	22
Urea (Twort-Archer)	12	29	34	39	36	10	34	35	73
N P N (Folin)	—	—	—	—	32	—	—	30	—
Uric acid (Folin)	Trace.	5·7	—	—	1·4	—	3·0	4·0	—
Creatinin (Folin)	1·2	1·5	1·5	1·2	1·3	1·4	—	1·2	—
Chlorides (Van Slyke)	630	610	583	640	668	597	540	660	540
Cholesterol (Myers-Wardell)	Absent.	Trace.	Trace.	Absent.	Absent.	Absent.	Absent.	Trace.	Absent.
Calcium (Kramer-Tisdall)	9·0	6·5	7·9	—	8·7	8·8	8·4	8·0	—
Phosphorus (Bell-D'Oisy)	2·5	1·2	1·1	3·3	2·0	2·0	2·5	2·5	8·0
Total protein (Young-Bennett)	300	50	600	25	200	250	100	400	200
Globulin (Pandy)	+ +	+	—	—	+	—	—	—	Absent.
Blood	Absent.	+ +	Absent.	Absent.	Absent.	Absent.	Absent.	Absent.	Absent.
Bile-pigments*	—	—	—	—	—	—	—	—	—
Lactic acid	Trace.	+ + +	—	—	Trace.	—	—	—	—

* All fluids gave a negative reaction.

is of interest in comparison with the low readings obtained on the remaining fluids in the series. Urea was present in estimable quantity in all the fluids. The single high reading of 73 mg. per cent. is not comparable with the other readings, because this fluid was obtained at autopsy several hours after the death of the patient, when some degree of decomposition had undoubtedly occurred. The high uric acid reading of 5·7 mg. per cent. is of interest, though its significance is not understood. The relatively constant values obtained for the creatinine content of the liquor amnii, even in the presence of maternal renal disease, are of much interest in connexion with the known stability of this substance in the blood and the urine. The chloride content does not vary much from the normal content of the blood, and seems to be, like the creatinine, one of the relatively stable chemical constituents of the liquor amnii. The absence of cholesterol is of interest in view of the known importance of this substance to the body, and the precautions taken by the body to conserve its supplies. Whatever may be the value of the liquor amnii to the fœtus—and conflicting opinions are held—it is certain that the fluid is a waste product to the mother, and the absence of cholesterol in the fluid may possibly be associated with this fact. The calcium readings are fairly constant at a slightly lower level than the readings for the normal serum calcium, but it must be remembered that the fœtus is a drain upon the maternal stores of calcium and that, in consequence, the serum calcium tends to fall towards the end of pregnancy, so that the readings obtained on this series of fluids are possibly only very slightly lower than the readings of the maternal serum calcium. The high phosphorus reading of 8 mg. per cent. was obtained on a fluid removed at autopsy, and cannot be compared with the other readings in the series. The total protein content shows much variation, and the variations are difficult to explain, especially the low reading of 50 mg. per cent. in the second case of maternal phthisis.

This short series of chemical examinations suffers from two serious disadvantages: (1) the absence of coincident blood chemical analyses, and (2) the absence of any normal standards for the chemical constituents of the liquor amnii. It is not possible to rectify the second defect in a general hospital that does not cater for normal cases of labour, but it should not prove difficult to obtain an accurate knowledge of the chemical composition of the normal liquor amnii from the material available in one of the large maternity hospitals, and the above series of observations has been published chiefly in the hope that it will stimulate the prosecution of this useful work.

In conclusion I wish to express my thanks to my colleague, Mr. Adshead, for his generous collaboration, and to acknowledge my indebtedness to my technical assistant, W. R. Hackett, who has carried out most of the estimations under my supervision.

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OSTEOMYELITIS OF THE PATELLA

By Richard A. Manclark, M.R.C.S. Eng.
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A girl, 7 years of age, was admitted to St. John's Hospital, Lewisham, on Sept. 3rd, 1932, with a swollen left knee, which had been painful for four days. There was no history of injury. Apparently the child had not seemed well for the last five weeks—she had "just sat about and did not want to play at all."

the fact that it involved a laboratory test the sign was omitted as not being of clinical interest in most urgent cases.

(4) *Deep tenderness in the left costo-muscular angle.*

Mr. Wells was convinced that this last sign was of great value in arriving at a diagnosis. Its presence was no doubt explicable on the assumption that the pressure was transmitted to the tail of the pancreas. He had so far failed to find any specific reference to this sign, except in one American text-book (Homans's), which said: "more especially is tenderness in the left costo-vertebral angle, due to inflammation of the tail of the pancreas, of great diagnostic significance."

In the discussion which followed, the PRESIDENT said he had hitherto regarded acute pancreatitis as undiagnosable; certainly surgical treatment had usually to precede diagnosis. In the few cases he had seen the symptoms and physical signs were so alarming that an urgent laparotomy was obviously indicated, and only during its performance was the diagnosis made. In his last case, a man of 51 was in perfect health until one hour after an unusually hearty meal of curried veal, when violent pain began in the upper abdomen. This was unrelieved by morphia, and 20 hours after its onset operation disclosed an acutely inflamed pancreas and the usual fat necrosis. The man recovered rapidly.

Dr. I. HARRIS read a paper on a Method of Measuring the Force required to Compress an Artery, and Mr. BRYAN MCFARLAND a paper on the Treatment of Congenital Club-foot.

REVIEWS AND NOTICES OF BOOKS

Diseases of the Eye

Practitioners Series. By ANDREW RUGG-GUNN, M.B. Edin., F.R.C.S. Eng., Surgeon to the Western Ophthalmic Hospital. London: William Heinemann (Medical Books), Ltd. 1933. Pp. 188. 12s. 6*d*.

FOR the general practitioner who does not profess to specialise on the eye there is already a choice of text-books, but this is certainly one of the most practical and useful yet produced. No attempt is made to deal with those parts of the subject which are more properly left to the specialist—that is, all operative procedures, refined diagnosis of fundus conditions, and the optical diagnosis and treatment of errors of refraction. All the more common types of ocular disease, however, are efficiently dealt with, and we would specially commend the detail with which the treatment of comparatively trivial diseases such as the more common inflammations of the conjunctiva and eyelids is discussed.

The lesions of the eye are described always in such a way as to emphasise their association with disease elsewhere. Interstitial keratitis, for instance, has long been known to be a manifestation of congenital syphilis, but the fact that most cases tend to get well without specific treatment has had the result that in the past many ophthalmic surgeons have not considered it necessary to employ it. Mr. Rugg-Gunn takes the contrary view, which has been expressed even more strongly by Mr. Lindsay Rea, a colleague of his at the Western Ophthalmic Hospital. Some remarks on various methods for the medical treatment of cataract, none of which is recommended, may be found useful by the practitioner who has to deal with patients anxious to know if any non-operative treatment is likely to be effective. In dealing with primary glaucoma Mr. Rugg-Gunn mentions the two conflicting views of its pathology which are now held without supporting either. The commoner diseases of the fundus are well described and some of them pictured. Concerning detachment of the retina, a condition which it is important for the practitioner to be able to recognise, information concerning the encouraging results of modern methods of operative treatment is up to date, although it is fairly certain to need elaboration before the next edition of the book is published. The differential diagnosis between paralytic and concomitant strabismus comes within the scope of the general practitioner; this book will help him to make it. The importance of recognising true squint in children at the earliest possible time is perhaps hardly sufficiently emphasised here. The figures, so far as they go, are useful; one of them pictures a useful form of bandage not generally known, and there are eight excellent plates. Two of them are noteworthy: one shows a photograph of the ciliary processes and zonule of Zinn taken from behind, and another shows the radiogram of an injected mucocele on one side and an injected normal lacrymal sac and nasal duct on the other.

The practitioner will find this book really helpful.

Les sequelles de l'encéphalite épidémique

By GEORGES GUILLAIN and PIERRE MOLLARET (La Pratique Médicale illustrée). Paris: G. Doin et Cie. 1932. Pp. 106. Fr.28.

WHEN encephalitis lethargica was first recognised in its acute form (1917–18), certain manifestations, such as an alteration in the mental condition, residual cranial nerve palsies, athetoid movements, and paresis were observed in a limited number of patients who in other respects had recovered from their attacks of illness, and the original investigators expressed concern about the possible risks of after-effects in the disease. We know now that this concern was fully justified. As early as 1921 the subject of post-encephalitic paralysis agitans (Parkinsonism) was brought forward by Prof. Netter at the Congress of the Société de Neurologie de Paris. In 1922 the Ministry of Health Report on Encephalitis Lethargica was able to furnish a lengthy list of sequelæ. Since then we have had comprehensive descriptions of the types and associated signs and symptoms of encephalitic after-effects from Gabrielle Lévy in France, from C. von Economo in Austria, and from A. C. Parsons in this country. There is, in addition, a large and increasing amount of literature on the subject dealing with individual groups of cases. The great frequency of the parkinsonian syndrome is a marked feature of continental reports. The manifestations of the after-effects of encephalitis lethargica may be grouped into (*a*) those appearing in the course of the original acute malady and persisting after partial or complete disappearance of all other symptoms, and (*b*) those which ensue after the original acute malady has apparently terminated or in some cases has passed unrecognised. Such effects are declared after a latent period of extreme variability ranging from some weeks to two years. In some reported cases the after-effects cleared temporarily, but reappeared some months later. No definite opinion, therefore, can be expressed until after the lapse of some years as to whether an attack of encephalitis, however mild in appearance, may or may not result in serious sequelæ. The general and merciful decline in new cases of encephalitis

MEDICAL SOCIETIES

MANCHESTER MEDICAL AND PATHOLOGICAL SOCIETIES

A JOINT meeting of these societies was held on Jan. 11th, with Prof. E. D. TELFORD in the chair. A paper on

Grades of Immunity

was read by Prof. W. W. C. TOPLEY (London). The term immunity, he said, does not define an entity, the characters of which we can describe with precision. It is a loose generic term that covers all grades of resistance beyond complete susceptibility up to that ideal, and perhaps hypothetical, condition in which a person is entirely indifferent to the attacks of a potentially pathogenic parasite. We can recognise several different grades of immunity, though we cannot separate them sharply from one another. In the case of an invasive parasite complete susceptibility is associated with an acute bacteræmic type of infection, almost uniformly fatal, with minimal local lesions. A low grade of partial immunity is associated with less frequent or less severe bacteræmic infections, more frequent and rather more extensive local lesions, and occasional cases of latent infection. With partial immunity of a moderate grade bacteræmic infections decrease still further in frequency and severity, and the local lesions dominate the clinical picture, while latent infections become more frequent. With partial immunity of a high grade bacteræmia is rare or absent, the local lesions are slight or minimal, and latent infections are the rule. As this grade passes into complete immunity latent infections become less and less frequent, until the parasite can no longer find any foothold in the host's tissues. The clinical syndrome displayed by many of our commoner infective diseases is an expression of partial immunity; and immunological methods of prevention and cure must be regarded, in most cases, as procedures that allow us to increase resistance from a lower to a higher grade, rather than to confer solid immunity on an initially completely susceptible host. Such minor changes in resistance may be of considerable value in the prevention or treatment of infective disease; but—because they are minor changes—their effect is difficult to measure, and there is a risk of persisting with a useless method, or of neglecting a valuable one. The assessment of any immunological method of prevention or cure demands close coöperation between the laboratory worker and the clinician or epidemiologist, and adequate data can seldom be obtained without a carefully planned group inquiry on an extensive scale. Preventive inoculation against typhoid fever, against the common cold, or against diphtheria, and the serum treatment of pneumonia or of poliomyelitis, afford instances in which we have obtained some measure of the actual effect in man. There are, however, very many cases in which we have as yet no knowledge of the real value of a possibly useful procedure, and it is very desirable that steps should be taken to remedy our ignorance, and so to place our practice on a firmer scientific basis.

At a meeting of the Pathological Society on Feb. 8th, Prof. S. L. BAKER discussed

Intrarenal Obstruction during the Excretion of Hæmoglobin

He said that the excretion of large quantities of hæmoglobin, as in blackwater fever, might produce severe renal damage. The renal lesion consisted in an obstruction of the tubules by granular material derived from hæmoglobin and precipitated in the tubules during the course of excretion. A similar obstruction might occur during the hæmoglobinuria that follows the transfusion of incompatible blood; in this case there was a rapid intravascular hæmolysis of the transfused corpuscles. Two such cases in which fatal renal obstruction followed the transfusion of incompatible blood were studied by S. L. Baker and E. C. Dodds (1925), and it was shown that death resulted from blockage of the intrarenal tubules by granular material derived from hæmoglobin. The factors determining this precipitation were (*a*) the hydrogen-ion concentration of the urine, (*b*) the salt content. If the patient were excreting an acid urine (pH 6 or less) with a salt content of 1 per cent. NaCl or over, such precipitation was likely to take place. This precipitate was hæmatin. A similar intrarenal precipitation could be produced in rabbits by the intravenous injection of hæmoglobin solutions if the animal's urine were rendered acid, as by cutting off the supply of green food. If the urine were alkaline the hæmoglobin was excreted unchanged, and no ill-effects on the kidney were produced.

In all conditions in which hæmoglobinuria occurred it was important to make the urine alkaline, and so avoid the possibility of intrarenal obstruction.

LIVERPOOL MEDICAL INSTITUTION

AT a meeting of this institution on Feb. 9th, with Dr. H. R. HURTER, the president, in the chair, a note on the

Diagnosis of Acute Pancreatitis

was read by Mr. C. A. WELLS. His object, he said, was to quarrel with the common belief that the diagnosis of this condition was almost impossible until after the abdomen had been opened, and also to draw attention to a sign which was not generally described. For descriptive purposes cases were divided into two classes: (*a*) the fulminating, in which Moynihan spoke of "profound collapse and unendurable agony"; and (*b*) the less fulminating, which at present seemed to be the commoner. Attention was chiefly directed to the second and larger group.

Mr. Wells believed that a pre-operative diagnosis could and should usually be made. The condition was suggested by the onset of pain, both in the upper abdomen and back, combined with the discovery on physical examination of a distinct upper abdominal localisation, possibly a sense of soft fullness and commonly incomplete rigidity. The diagnosis having been suggested by these findings could be confirmed by certain signs and tests:—

(1) *Loewi's sign.*—Most writers agreed that this was worth trying, but was not always positive in proved cases, whilst it might be positive in cases other than pancreatitis. The speaker's experience was that the sign was interesting but of small value.

(2) *Cyanosis.*—(*a*) A vague degree of cyanosis, associated with collapse and difficulty in breathing. (*b*) Patches of discoloration in almost any part of the body, generally agreed to be almost diagnostic but obviously very rare. (*c*) Grey Turner's sign of staining in the left flank, clearly a late manifestation of the disease.

(3) *Metabolic changes.*—The only reliable change in this group seemed to be the increase in diastase, and owing to

THE LANCET

LONDON: SATURDAY, FEBRUARY 25, 1933

WORKMEN'S COMPENSATION—ACCIDENT OR DISEASE?

Like the original statute of 1897, the present Workmen's Compensation Act of 1925 awards compensation for "personal injury by accident." But what does "accident" mean? The House of Lords a week or two ago, in Partridge Jones and John Paton Ltd. *v.* James, carried a little further the accepted extension of "accident" to the cases where the workman, as Lord Shaw once said, is carrying about with him a fatal disease. The husband of Mrs. James (the respondent) suffered from disease of the coronary arteries. His work consisted of drossing—i.e., dipping metal sheets in a pot of dross, taking the sheets out and finally cleaning the dross from the pot. He finished cleaning out the dross one day at 12.30 P.M., stepped from the staging, exclaimed "Oh! my chest," and died within ten minutes. The county court judge held that the disease of the arteries caused a failure of blood-supply resulting in angina pectoris; the physical exertion of performing the man's ordinary work accelerated death and caused death to occur when it did. He held that this was "personal injury by accident" and awarded compensation. The Court of Appeal and the House of Lords have upheld the award. The personal injury would not have happened but for the disease; nevertheless the combination of disease and employment made it a personal injury by accident.

In Clover Clayton & Co. *v.* Hughes (1910) Sir John Simon tried hard to persuade the judges that injury by disease cannot be injury by accident. The Act, he said, says injury by accident, not injury by the work which workmen are doing. He was dealing with the death of a workman who suffered from an aneurysm in such an advanced condition that it might have burst during sleep; very slight exertion or strain would have been sufficient to cause a rupture. The man was merely tightening a nut with a spanner; he had given a couple of turns only where half a dozen turns were required. It was an ordinary operation involving no special strain, but the aneurysm burst and he died. The House of Lords decided that it was an accident arising out of his employment; Lord Macnaghten explained why. An aneurysm, he said, is understood to be an unnatural or abnormal dilatation of an artery; still, it is part of the artery and so of the man's body. The man "broke part of his body," as Lord Robertson said once (in Brintons *v.* Turvey), and he certainly did not mean to do it.

> "The fact that the man's condition predisposed him to such an accident seems to me to be immaterial; the work was ordinary work but it was too heavy for him. . . . The fact that the result would have been contemplated as a certainty by a medical man of ordinary skill if he had diagnosed the case is, I think, nothing to the purpose."

The judges interpreted accident in the popular sense of the word. We meet with an accident if we miscalculate our powers. Lord Atkinson took a contrary view, but Lord Macnaghten's view prevailed. Even if judges feel that a series of decisions has pushed the law into a position which Parliament never dreamt of when the original Workmen's Compensation Act was passed, the House of Lords had settled the position and it was bound recently to follow its own ruling.

There was once much judicial uncertainty in the matter—partly because the higher courts felt themselves bound by the findings of fact and these findings varied greatly. A generation ago the judges had to deal with several claims for compensation by workmen injured in the course of ordinary work. It was no use to argue that accident must connote some outward injury, for on this basis the seaman who fainted in the rigging and fell into the sea might fail to obtain compensation. It was equally useless to contend that accident must be something caused by an untoward external event like the bursting of a boiler or the misbehaviour of a machine: a workman's hand can be crushed between two wheels when the machinery is working perfectly. In Hensey *v.* White (1900) a workman, physically unsound, had strained himself in turning the wheel of his machine. The arbitrator held it was not an accident and the Court of Appeal agreed. In Roper *v.* Greenwood (1900) a woman, suffering from prolapsus uteri, strained herself in carrying heavy boxes in the course of her work: this again was held not to be personal injury caused by accident. But in the same year in Timmins *v.* Leeds Forge Co. a workman, who strained himself in trying to lift planks which were frozen together, was held to have been injured by accident. Two years later in Boardman *v.* Scott a man had been carrying a heavy beam and, in jerking it to get it level on his shoulder, he lacerated the muscles of his back: this was deemed accident. Finally in 1903 in Fenton *v.* Morley, where a workman had ruptured himself in doing his ordinary work of turning a wheel, the House of Lords unanimously held it was personal injury by accident. This decision overruled Hensey *v.* White (where the facts had been almost identical) and many other cases. The judges definitely state that the employers must pay compensation for internal injuries occurring in the course of a workman's employment no matter what the state of his health. Thus the cases where a man "carries about with him a fatal disease" become a serious industrial problem. If a more frequent and systematic examination of the workman's physical condition will help to solve the problem, how are we to set about it?

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ALLERGY IN RHEUMATISM AND GOUT

After histological study of rheumatic nodules and joint lesions and gouty tophi, M. P. Weil and J. Delarue[1] have come to the conclusion that lethargica has caused attention to be even more intently focused on the character of the sequelæ which concern the different domains of neurology, psychiatry, general pathology, and legal medicine.

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[1] Presse Méd., 1932, xli., 1969.

This monograph reviews and assembles in succinct form the protean manifestations of the disease and provides a useful introduction to more intensive study of the subject.

Protoplasmic Action and Nervous Action

Second edition. By RALPH S. LILLIE, Professor of Physiology, University of Chicago. The University of Chicago Press. 1932. Pp. 417. *16s. 6d.*

Prof. Lillie is well known as a worker in general physiology, using that term in its most modern sense. The field covered by this work is very wide, and contains expressions of personal opinions and interpretations which would not be universally accepted. The 15 chapters in the book deal with the consideration of physiology from a purely cellular point of view. Chapter IV. is perhaps the most interesting since it deals with protoplasm as a physical system. A wider discussion of catalysis in living matter, and a separate chapter devoted to the energetic considerations of living matter would have been useful. The general question of oxidation and reduction by living tissue is hardly dealt with at all.

It is, however, somewhat presumptuous to suggest what should or should not be included in a monograph, for, while a text-book must conform to pattern, the author of a monograph may surely limit its scope at his pleasure. Prof. Lillie has given us an ably written and stimulating collection of essays.

A Manual of Bacteriology, Medical and Applied

Ninth edition. Revised by R. T. HEWLETT, M.D., F.R.C.P., D.P.H. Lond., Emeritus Professor of Bacteriology in the University of London; Director of Pathology, Seamen's Hospital, Greenwich; and JAMES MCINTOSH, M.D., B.Ch., Professor of Pathology, University of London; Director of the Bland-Sutton Institute of Pathology, Middlesex Hospital. London: J. and A. Churchill. 1932. Pp. 746. *18s.*

IN the production of this edition of his classic text-book, which first appeared in 1898, Prof. Hewlett has had the collaboration of Prof. James McIntosh. The invigorating effect of this infusion of new blood is noticeable in a book which has always been characterised by its wide scope and the well-balanced presentation of the subject. The work has been completely recast in somewhat larger type, so that the addition of a further 100 pages does not represent its bulk of new matter. All the sections have been carefully overhauled and some of them rewritten, notably those on undulant fever, diphtheria, spirochætal diseases, and the virus diseases and bacteriophagy. The last-named chapter is especially interesting and well written. In this chapter Plate XLI., B. appears to illustrate variolar encephalitis, whereas the text (p. 612) suggests that the condition shown is post-vaccinal encephalitis. The figure may mislead in so far as it does not indicate the characteristic perivascular demyelination of post-vaccinal encephalitis to which Prof. McIntosh himself primarily called attention, although he holds the view that the two forms of encephalitis are closely related. The table of blood groups (p. 196) might puzzle a student who adopts the prevalent Moss nomenclature; the bacterial mill, illustrated on p. 38, is held by many who have tried to use it to be an unsatisfactory piece of apparatus. Such questions, however, may be largely a matter of personal preference. We can commend this book as a thoroughly sound text-book of bacteriology. The ground is covered very thoroughly, and the relation of medical bacteriology to pathology and public health is admirably maintained.

Anatomy (Upper Extremity)

Catechism Series. 4th edition. By C. R. WHITTAKER, F.R.C.S.E., F.R.S.E. Part I. Edinburgh: E. and S. Livingstone. 1932. Pp. 80. *1s. 6d.*

THE issue of books such as this are deprecated by anatomists, but welcomed by students anxious to pass an examination. This is a good collection of questions of the sort commonly asked in ordinary examinations in descriptive anatomy, with model answers. These answers, as might be expected from the reputation of the author, are thoroughly sound, and, within its limits, the little book can be recommended to students.

La Belgique Sociale

By Dr. RENÉ SAND, Agrégé de l'Université de Bruxelles; Membre des Conseils supérieurs de l'Assistance, de l'Instruction publique et des Œuvres de l'Enfance. Brussels: J. Lebègue et Cie. 1933. Pp. 196. Belg. fr.18.

Dr. Sand, who is the technical counsellor to the League of Red Cross Societies and president of the International Hospital Association, has used his wide experience of international affairs as a background in this study of public health and social welfare in his own country. The book deals almost exclusively with Belgium; yet it is easy to read between the lines that the praise the author allots, and the judgments he passes on matters in his own country largely reflect his intimate knowledge of what is happening elsewhere. His account of the public health and social welfare machinery starts from the year 1830. From then onwards there has gradually developed a patchwork garment with which the community has been clothed in a rather helpless fashion. Dr. Sand emphasises his running comments on this patchwork with statistics and other data which make his book not only a powerful plea for reforms, but also a valuable summary of what is being done to-day with regard to such problems as housing, food, infectious and mental diseases, alcoholism, cancer, infant and maternal welfare, sickness and accident insurance, occupational diseases, unemployment, and all the many other subjects with which public health and social welfare are concerned. Rural hygiene—a problem whose importance and urgency have but recently been discovered—receives special attention; and Dr. Sand shows how glaringly defective is the hygienic state of many a rural community in Belgium. The administrative autonomy such communities "enjoy" in the matter of public health is their undoing. For how can local talent, in the few spare moments it can devote to public affairs, grapple satisfactorily with the highly technical problems of a modern community? Dr. Sand's remedy for all this is centralisation. And at the centre he would like to see one body, not 15 bodies, as is the case at present, overlapping each other with great and unnecessary loss of efficiency. The conditions here revealed have so many parallels in other countries that this book will be read with sympathetic interest by many besides the Belgians.

being given, through a daily bonus, an adequate incentive to do their best. In no case was training at one process found of value when taking up a second process; in other words there was no "positive transfer" of dexterity. A view has also been put forward that the acquirement of dexterity at any process creates a habit which stands in the way of acquiring dexterity at some other process; in the field of sport, rowing coaches agree that those who have learned their rowing while engaged in sea fishing prove difficult pupils in racing eights. No evidence, however, was found to support a theory of negative transfer. On the other hand, the Board's inquiry reveals instructive facts about the best period of daily training for increasing productive speed. Eighty minutes' training per day in the simple process of chain assembling was found to give just as much improvement as double this length. Hence, where rapid training is required, a subject could be trained advantageously at one process in the morning and at another process in the afternoon without either interfering with the progress of the other. (Such results would appear to support the scheme of training adopted by that well-known athlete, Pollock Hill, who is famed for having won on the same day the mile and the three-mile in the Inter-varsity Sports. This athlete used to go out on the track each afternoon and train as if for the mile event: then he came into the pavilion and rested quietly for over an hour; after which he went out again to train for the three-mile event, as if he had not been previously on the track.) The best training period for chain assembling may be even below 80 minutes. Discussing the length of spell advantageous for maximum efficiency, the report found a four-hour spell too long; on the other hand, the introduction of rest pauses in a two-hour spell of work did not help. Adjustment to the length of work-spell, indicated by a slower rate of work, took place in a four-hour spell; but it was not shown in any spell shorter than four hours. A tendency to variability in the rate of output was found to increase with the length of work-spell; this variability increased with the onset of fatigue, and indeed was a more sensitive measure of its onset than any actual decrease in output. The more efficient subjects were found on the whole to produce a more constant output—that is to say, their work curves of output were maintained hour by hour at a constant level, just as a well-trained long distance runner maintains the same pace lap after lap over a ten-mile distance.

This question of transfer is part of the larger question of the relations existing between types of human skill, the nature and extent of which was discussed in an earlier report [2] of the Board which answered to some extent the popular criticism levelled against our public schools, that its gods are recognised in its athletes and not in its intelligentsia. Dr. A. A. MUMFORD, whose studies of the physical measurements of schoolboys are well known, has now taken much of the sting out of this gibe by showing that the gods, as a matter of fact, combine both attributes. Examination of 797 boys attending the upper part of the Manchester Grammar School leads to the conclusion [3] that physique and scholarship are in general correlated. Amongst a group of boys all winning "colours" at games or sports, those with advanced scholastic attainments are more advanced in growth than those of lower mental attainments, their advantage being shown in height, weight, chest girth, and vital capacity. Similarly amongst boys none of whom do well at sports the better scholars show the better physical measurements. When various forms of athletics are considered it is found that the group of most advanced scholarship boys show to more advantage in team games than in feats of individual prowess, which suggests that their greater intelligence assists them materially in the combined forms of sport. Following the history of those boys who went to Oxford or Cambridge, we see that those who obtained first-class university honours had won more games colours and sports credits while at school than those who obtained only second-class honours, while the latter in their turn had obtained more colours and credits than those who gained only third-class honours. In this material there is no doubt of the correlation between brain and brawn.

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[2] Report No. 64. A Classification of Vocational Tests of Dexterity. By A. E. Weiss-Long and T. H. Pear. 1*s*. 3*d*.

[3] Jour. of Hyg., January, 1933, p. 80.

ANNOTATIONS

A HOSPITAL SURVEY OF LONDON

LAST week-end was issued the first complete survey ever made of the services available for the sick poor in the County of London. Such a survey was rendered possible when the Local Government Act of 1929 placed under the London County Council the whole of the publicly provided hospital services for London, formerly under the management of the Metropolitan Asylums Board and the several boards of guardians, which Act created at the same time a consultative body representing the voluntary hospitals, known as the London Voluntary Hospitals Committee. The survey [1] consists of two parts, one dealing with the voluntary hospitals, clinics, and dispensaries, prepared by the hospitals committee, of which Lord Riddell is chairman and Dr. Geoffrey Evans hon. secretary; the other dealing with the municipal hospitals, clinics, and dispensaries, prepared by the London County Council, under the guidance of Sir Frederick Menzies. Both surveys are for the calendar year 1931, and the latter especially must be regarded as provisional, inasmuch as the process of bringing the public health institutions fully into use for the purpose for which they were allocated is still proceeding as circumstances permit.

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[1] Joint Survey of Medical and Surgical Services in the County of London. Part I., Voluntary Hospitals, Clinics and Dispensaries. Prepared by the London Voluntary Hospitals' Committee. London: P. S. King and Son. Pp. 53. Price 2*s*. Part II., Municipal Hospitals, Clinics and Dispensaries. Prepared by the London County Council, and including information furnished by the Metropolitan Boroughs' Standing Joint Committee as to Medical Services provided by the Metropolitan Borough Councils. No. 2947. Published by the London County Council and obtainable through Messrs. P. S. King and Son. Pp. 41. Price 2*s*.

these lesions are all essentially the same, and have a common origin in tissue supersensitiveness or allergy. The significant features of the process are "fibrinous" necrosis, peripheral cellular infiltration, and a fibroblastic reaction leading to encapsulation of the lesion. The necrosis may be inconspicuous, as in the well-known Aschoff bodies of acute rheumatism, or it may be extensive and liable to calcareous and uratic deposits, as in gouty tophi.

Of late years the notion that allergy governs rheumatic fever has gained much ground, whilst the theory that it influences gout has also found supporters. H. F. Swift[2] recalls that as long ago as 1902, before the development of the modern theory of allergy, A. Menzer suggested that rheumatic lesions were dependent not so much on actual bacterial invasion of the tissues as on some mechanism involving the union of bacteria and their antibodies in the tissues. Since then, with the recognition of the Arthus phenomenon, and because of the occurrence of polyarthritis in serum disease, many workers have been attracted to the allergy hypothesis. Joint lesions have been experimentally produced in appropriately sensitised animals by injections of non-hæmolytic streptococci and other antigens; allergic skin reactions to streptococcal vaccines and filtrates have been demonstrated in rheumatic subjects; and the various investigations have been summarised in critical and comprehensive reviews—among others by Swift[2] and by H. Zinsser and H. Yu in 1928. Allergy in gout has received less attention but some suggestive observations have nevertheless been recorded. L. J. Llewellyn put forward the hypothesis in our columns in 1922, and later F. Gudzent subscribed to it. These and other writers have drawn attention to the familial distribution of gout, and to the occurrence of skin rashes in gouty persons, as supporting the hypothesis. F. Widal and his colleagues in 1925 demonstrated cutaneous supersensitiveness to certain wines, especially red burgundy, in gouty subjects. At this point mention may also be made of the disease known as hop-gout, seen among hop-pickers in Kent, which is characterised by acute joint and tendon lesions, and seems (as B. M. Smithies[3] remarked) to be a manifestation of supersensitiveness to the hop or to something connected therewith. If a disease that resembles podagra closely enough to merit the colloquial name hop-gout can be explained in terms of allergy, it seems not unlikely that true gout is susceptible of similar explanation. Evidence of this kind is, of course, far from sufficient to turn the tide of opinion away from belief that the disease is due to an error of metabolism, but it is interesting to observe that an excess of uric acid in the blood and an abnormal excretion of this substance, which have so long been the centre of interest in the study of gout, are now found to be also features of the allergic state. For example, H. W. Barber and G. H. Oriel,[4] who studied the blood chemistry of patients suffering various manifestations of allergy, not specifically including gout, found that during the acute attacks there was a rise of amino-acid, uric acid, and creatinine, and that the urinary excretions before and afterwards fluctuated accordingly. Thus uric acid seems to be in danger of losing its claim on gout; and of course it is well known that urate deposits are by no means essential to gouty lesions.

Airy and disjointed as these observations may be, they indicate a case for consideration, and the purely histological findings recorded by Weil and Delarue may serve as a useful connecting link in the study of allergy in relation to articular diseases.

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TRANSFERENCE OF DEXTERITY

A popular belief is that training at one type of dexterity assists in acquiring another type; that is to say, that if a player has acquired dexterity at rowing or cricket, for example, he will acquire dexterity at golf or tennis more quickly than if he had not previously become a skilled player at anything. This popular belief can neither be proved nor disproved, for there cannot be controlled experiments. Some people have a natural flair for games, and it would be easy to cite examples of men who have been successful in several branches of sport; but for the most part they played all these more or less simultaneously, and one cannot say that the training of one game was a preliminary to any other. There are indeed odd cases of great lawn tennis players who took up golf comparatively late in life and did very well at it, but even so they might have done as well—if not better—had they started with golf; and there is one department of athletic skill in which the evidence points in the opposite direction, for it seems to be agreed that few rowing men become prominent at any other form of sport taken up later; nor does any other sport, pursued concomitantly, help to make an oarsman. On the other hand many supporters could undoubtedly be found for the argument that, even if rowing is an exception, dexterity in sport can be transferred to a considerable extent in accordance with individual proclivity.

Similarly in industry the view has been held that training in one kind of manual skill can be transferred to another, and here it may prove possible to devise controlled tests yielding trustworthy information. This has been attempted in a prolonged and careful investigation by the Industrial Health Research Board, a pertinent report from which department has just appeared.[1] In an introductory note Prof. Pear defines the terms "skill" and "dexterity" for the purpose of this report. Skill is taken to be an integration of well-adjusted muscular performances; it is applied to the higher, more complex integrations of performance, the term dexterity to the simpler patterns of specific habits. Simple dexterity only was the subject of the present study, in which boys were called upon to perform manual processes,

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[2] Jour. Amer. Med. Assoc., 1929, xcii., 2071.

[3] The Lancet, 1929, ii., 494. [4] Brit. Med. Jour., 1928, ii., 880.

[1] Manual Dexterity: Effects of Training. I. Transfer of Training in Manual Dexterity and Visual Discrimination. By E. M. Henshaw, P. Holman, and J. N. Langdon. II. Distribution of Practice in Manual Dexterity. By E. M. Henshaw and P. Holman. Medical Research Council: Industrial Health Research Board. Rept. No. 67. H.M. Stat. Office. Pp. 45. 1s.

The most important fact emerging from the research is that complications occurred just as frequently in the treated cases as in the control series. This agrees with observations on a smaller number of cases made in this country, and it leads Dr. King to the disappointing conclusion that overbreathing does nothing to prevent post-operative lung complications. It is impossible to reconcile this failure with the hypothesis that collapse is the first and essential stage in post-operative pneumonia. It is not disputed that some degree of collapse is often present, for there is no doubt the aeration of the bases of the lung is defective after laparotomy and, as M. Printzmetal, S. Brill, and C. D. Leake[4] have recently shown, the intrapleural pressure is actually increased. But collapse, if present, is of secondary importance. The available evidence suggests that the sequence of events is as follows. The patient returns from the operating theatre with a painful gash in his abdomen which effectually discourages him from *coughing*. Mucus then tends to accumulate in his bronchi and so the path is prepared for bronchitis and all its attendant dangers. No amount of *overbreathing* will remove this mucus. Indeed, it is probable that inspiration, being more efficient than expiration, will tend to suck the stagnant secretions still further into the bronchial tree. In its final analysis, then, the problem amounts to this: the patient develops bronchitis mainly because it hurts him to cough. His attendants can help him most, apart from avoiding tight binders and encouraging early movement, by pointing out to him the error of his ways.

A HABITATION FOR THE INSANE

EVERYBODY knows the kind of treatment that was meted out to the insane in the eighteenth century. In April, 1790, a Quaker named Hannah Mills died in York Asylum, and suspicions of the treatment she had received were aroused in the minds of York Friends. A practical idealist, William Tuke, turned his thoughts and energy to a scheme for providing for Friends "an habitation" where others afflicted like Hannah Mills might receive more tender care. At that time the lunatic was regarded as a person whose main, if not only, need was protection, and the story of The Retreat, told by its present steward,[5] is largely the story of the development of the conception of a mental home as a hospital. A home-like atmosphere has, however, always been maintained, and the process of hospitalisation has been that of building up a combination of club and hospital life, and not that of substituting for the home an institution run more by the head than by the heart.

The first patient was admitted on June 13th, 1796, and soon such modern methods as the warm bath and the liberal diet were in use. Drugs and medicine were found to be of little value. The treatment of a case of insomnia illustrates the simple and practical way in which the first superintendent, George Jepson (not a medical man), faced difficulties. He argued that animals seek repose after a full meal, and therefore caused a patient whose "violent excitement of mind indisposed him to sleep, to be supplied freely with meat or cheese, and bread and good porter." The result was satisfactory, and in subsequent cases where the patient was adverse to food, beer alone was used with great advantage, "always avoiding, in all cases, any degree of intoxication." Depite the attitude of the early Quakers to frivolity, some amusements were allowed even at this time; writing and reading, chess, draughts, and so on. Novels, however, were not allowed until the time of John Kitching, who was the second resident medical officer (1879–1884), and introduced many other amenities: lectures, botanical studies, a rocking boat, and a donkey. It was he who first advocated the villa system, which was adopted under the régime of his successor, Robert Barker. The plan of sending some of the patients to the seaside for a holiday was introduced by Thomas Allis, the superintendent (non-medical) from 1823–1841.

All these things are now commonplaces but they were startling innovations at the time, and only towards the end of the nineteenth century did The Retreat cease to be unique. It is difficult to realise now how much interest the experiment aroused. The Retreat always encouraged visitors, and from the beginning appointed three official varieties. In 1816 Dr. Duncan came from Dublin "for the purpose of visiting the most celebrated lunatic establishment in Great Britain." Elizabeth Fry came several times, and recorded in her diary in 1799: "We saw the Friends' Retreat for crazy people, which my father thought extravagantly carried on."

The story of The Retreat was well worth the telling. It has been set forth in an attractive format, and in lucid prose full of quiet humour. A foreword was contributed by Dr. Bedford Pierce, the greater part of whose long and fruitful life was devoted to the hospital, and to whom the book forms an apt memorial. At its close is a note by the superintendent, Dr. Neil Macleod, forecasting the future of mental treatment in general and of The Retreat in particular. The book is illustrated by photographs of the worthy men and women who have played their part in building up the institution, and the whole forms an inspiring record.

THE MECHANISM OF DYSPNŒA IN HEART FAILURE

OBSERVATIONS have been made by T. R. Harrison and collaborators[1] on the cause of dyspnœa produced by mild exercise in cases of heart disease. They assert that an adequate explanation of such patients' dyspnœa has not yet been offered, and object to the one based on lowered circulation-rate on the ground that neither in arterial nor venous blood have the altered hydrogen-ion concentration, carbon dioxide content and pressure, and oxygen content postulated by this view been demonstrated. The cause of this dyspnœa experienced on mild exercise was therefore sought elsewhere. The subjective symptom of respiratory distress—that is dyspnœa—was found to be proportional to the ratio of ventilation to vital capacity. Thus dyspnœa tends to appear with increased ventilation or with reduced vital capacity. The latter is common in heart disease. Experimental work on dogs showed that reduction of the vital capacity, using various methods, led to a reflex increase in breathing, the afferent path being through the vagus. No further reduction in vital capacity was noted on exertion, so it evidently plays no part in the production of dyspnœa on mild exertion, and the cause must be looked for in changes in ventilation. Observations on ventilation made on normal men and on dogs strongly suggested that the increase produced by limited muscular movements was due to nerve

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[4] Surg., Gyn., and Obst., Jan. 1933, p. 129.

[5] A Retired Habitation. By Harold Capper-Hunt, Steward of The Retreat. London: H. K. Lewis and Co., Ltd. 1932. Pp. 144. 7s. 6d.

[1] Arch. Internal Med., 1932, l., 690.

The London County Council is now spending well over £7,000,000 a year in maintaining 79 general and special hospitals, convalescent hospitals, and institutions, 49 dispensaries for giving outdoor medical relief, 13 institutions under the management of its public assistance committee, and 20 mental hospitals, colonies, and homes under the management of its mental hospitals committee. In addition the Council is spending nearly £450,000 a year on the medical inspection and treatment of school-children, including 73 voluntary treatment centres and arrangements with 17 voluntary hospitals. The survey shows that the total number of beds for sick persons in the Council's hospitals and institutions, apart from mental, at the end of the survey year was 38,945. The total number of in-patients treated in the year was 210,074 (of whom all but 5535 were resident in the county), and out-patient attendances numbered 259,036. The corresponding number of beds in voluntary hospitals was 14,833, the total number of new in-patients treated during the year 216,788 (of whom 79,385 came from outside the county), and the total out-patient attendances 8,355,756, being a number slightly greater than the whole population of Greater London. The significance of these figures is enhanced by admirably clear tables in both reports analysing the purpose of the beds allotted in each hospital and the purpose of out-patient attendances, giving full details of the numbers of medical and surgical staff, the percentage of beds occupied, and the average stay of the patient in them.

Most interesting because most novel is a geographical analysis showing for each hospital the numbers of patients coming to them from the various regions and boroughs of the county of London. The analysis is strikingly dissimilar in the two surveys. The general municipal hospitals are populated to a large and often preponderating extent by patients drawn from the borough in which they are situated. St. Giles', for instance, draws all except 6 of its 8511 in-patients from the borough of Camberwell; St. Charles' draws 2589 of its 3918 in-patients from the borough of St. Marylebone. Little more than 1 per cent. of the patients come from outside the county. On the other hand, some of the voluntary teaching hospitals draw quite a large proportion (in the case of Charing Cross more than half) of their in-patients from outside the county; and there is scarcely a borough in the whole of London which does not send an important contingent of patients to one or other of the 12 teaching hospitals. As was to be expected, the first choice of hospital in the case of each of the 30 metropolitan boroughs follows the path of least resistance.

In the north-western area Hammersmith, Fulham, and Chelsea choose St. George's; Kensington and Paddington choose St. Mary's; the City of Westminster chooses the Westminster Hospital. In the northern area Marylebone and Hampstead choose the Middlesex; St. Pancras chooses University College; Holborn and Islington choose the Royal Free; Finsbury and Shoreditch choose St. Bartholomew's. In the north-eastern area Stoke Newington, Hackney, Bethnal Green, Stepney, and Poplar choose the London Hospital; the City of London chooses St. Bartholomew's. In the south-eastern area Woolwich, Greenwich, Deptford, Bermondsey, and Southwark choose Guy's; Lewisham and Camberwell choose King's College. In the south-western area Lambeth, Battersea, and Wandsworth choose St. Thomas's.

But it must be added that in many cases the second choice was not so far behind the first, and in general the total number of patients going to other hospitals largely exceeds what we have called the first choice. Table C in fact is a striking example of how the hospital patient has maintained the voluntary system by an apparently arbitrary choice of hospital which he shall attend. This gigantic game of hospital halma is a fact to be reckoned with in any scheme of hospital reorganisation. The rules of the game are complex, but no doubt include the selection of cases for teaching purposes, the loyalty of practitioners to the school at which they were trained, and the prestige of well-known specialists.

By a happy coincidence the survey is made more complete by the reissue this week of a list[2] of "pay beds" now available in the London voluntary hospitals. This provision for the professional and middle classes is growing rapidly, the number of such beds known to King Edward's Fund on the last day of 1932 being 1667, compared with 590 in 1920. The list contains a description of the provision, whether in the form of single rooms, small wards for two or four persons, or cubicles, and a note of the normal weekly charge.

POST-OPERATIVE PULMONARY COMPLICATIONS

PULMONARY complications still rank among the commonest and most serious risks of major operations, especially those entailing an abdominal incision. If the broadest definition is adopted and a pulmonary complication is diagnosed in every patient who calls for a sputum-pot, it appears that bronchitis or some more serious condition occurs after well over half of all abdominal operations in men. In women, for some inscrutable reason, the incidence is notably lower. The type of anæsthetic chosen is thought to have little bearing on the problem and improvements in anæsthetic technique of the last few years do not seem to have improved matters. Unfortunately, too, there is no very general agreement about the pathogenesis. It is true that massive collapse of one or more lobes of the lungs is occasionally encountered; but there is no convincing evidence that minor degrees of this condition are at the root of the more common complications. As a rule the clinical picture is fairly clear-cut. Within 48 hours of the operation the patient develops a cough with tenacious mucopurulent sputum. In most cases the trouble goes no further, but in some the temperature and pulse begin to climb and more or less definite signs of consolidation appear at one or both bases. Clinically, then, the condition appears to be primarily one of basal broncho-pneumonia.

Among the many prophylactic and therapeutic measures which have been recommended, overbreathing, induced by administration of carbon dioxide mixtures, has enjoyed considerable popularity, largely owing to the enthusiastic advocacy of Yandell Henderson and H. W. Haggard. It is claimed that overbreathing removes the last traces of irritant anæsthetic vapour from the lungs and also corrects any tendency to focal atelectasis. These, however, are merely theoretical arguments; the proof of the pudding is in the eating. Controlled observations have up to the present been few, but a recent paper by D. S. King[3] is very much to the point. It is based on a series of 648 laparotomies in which hyperventilation was induced during the first three post-operative days, either by inhalation of mixtures containing carbon dioxide, or by rebreathing of expired air. Another series of 667 cases served as a control. Cases of simple bronchitis were ignored, but even so the incidence of lung complications approached 50 per cent. in operations on the stomach and duodenum and the gall-bladder.

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[2] Post free 3*d*., from King Edward's Hospital Fund for London, 7, Walbrook, E.C.4.

[3] Jour. Amer. Med. Assoc., Jan. 7th, p. 21.

and a fibrous scar at the base of the left ventricle posteriorly. White also has under observation a patient, aged 67, who had his original attack of coronary thrombosis 20 years ago, and has survived two further attacks. At present he is still leading an active life as a minister of religion, with little restriction on his movements. Such cases show that myocardial infarction may be followed by complete and lasting functional recovery. and the paper by the late Dr. Carey Coombs, reviewed in our issue of Jan. 28th (p. 209), provided numerical evidence that a fair proportion of patients survive their first attack.

EXERCISE AND DIGESTION

It is a pleasant and. occasionally, a profitable pastime to review old tags and proverbs by the light of modern knowledge. For example, we are exhorted to rest awhile after dinner, but after supper to walk a mile, and. superficially, there seems to be no foundation for a different ritual attending the two meals. Is the assumption that midday dinner is the more substantial meal and so calls for a rest which is less necessary after supper? Or may an arbitrary distortion be employed and the conclusion be accepted that after both dinner and supper rest is advisable followed after an interval by walking exercise? Natural inclinations go for something. and the lethargy and disinclination for activity following a full meal are certainly safeguards against syncope due to the pressure of a distended stomach upon a rapidly beating dilated heart. On the other hand, it is a matter of common observation that the digestion of a comparatively light meal may be assisted by gentle exercise, and scientific support for this experience is provided by the fractional test-meal and by radioscopy. Campbell, Mitchell, and Powell[1] found that in normal healthy young men moderately severe exercise, such as running at the rate of eight miles an hour, delayed the digestion of a recently ingested light meal; but that gastric secretion was not inhibited, and the rate at which the stomach emptied itself was increased by easy walking, especially in company and with conversation—concomitant factors which seemed to show the importance of psychological influence, an influence which is too well recognised to require elaboration.

The latest investigators in this field, F. A. Hellebrandt and M. M. Miles,[2] of the University of Wisconsin, confirm the impression that gentle exercise before or after a test-meal encourages and augments gastric acidity. The duration of exercise is not necessarily in itself, they find, an adverse factor; but the element of exhaustion, whether before or after the meal, is definitely inimical to secretion. To ensure exhaustion rapid bicycle riding and rope jumping were employed; whilst in further researches to introduce the element of competition with the inevitable psychical accompaniments they enlisted the coöperation of basket-ball players—young women—in a contest of spirited rivalry. Moderate or mild muscular exertion increases general metabolism, improves the circulation, and has a stimulating effect upon the organism as a whole, the stomach naturally participating in the general increase of functional activity. Exercise carried on at high speeds incurs an oxygen debt and the rapid accumulation of acid metabolites—in a word, exhaustion, or at least fatigue. The accumulation of lactic acid in the blood lowers its bicarbonate content and accelerates the output of carbon dioxide. The lungs cannot wash out the carbon dioxide sufficiently rapidly and the hydrogen-ion concentration rises. In the light of experimental observations the reduction in gastric acidity as a result of violent exercise may be due to the concomitant fall in plasma-bicarbonate. Hypo-acidity then appears when muscular exertion is associated with the incurring of an oxygen debt. Further, during severe exercise, splanchnic vasoconstriction diverts blood from the viscera to the actively contracting limb muscles and to the skin, producing a relative diminution of oxygen to the stomach which again will reduce gastric acidity. Confirmation of these chemical tests is forthcoming on the radiographic side. From the physiological laboratory of Guy's Hospital, T. W. Adams, D. J. Clarke, J. M. Lees, M. S. Pembrey, and R. S. Vine[3] submit the results of experiments to show the influence of muscular work upon the movements of the stomach. The meal employed consisted of ¼ lb. cold pressed beef, two rolls, two pats of butter, ½ oz. bovril, and 6 oz. barium sulphate minced together and made into a stiff paste with water. Radiographic observations followed on hard muscular work, such as running a mile in eight minutes or swimming 450 yards in 13 minutes in a bath at a temperature of 60·8° F. They found that such exercise is associated with relaxation of the stomach and delay in passage of the food, and that even if the work is started at a longer interval after the meal, a definite inhibition of the movements is produced.

It has been the experience of radiographers that moderate and natural exercise helps the stomach to empty, and it is often their practice to advise patients under investigation to go for a walk after their first examination of an opaque meal. before subsequent examinations, to reproduce physiological processes at their optimum. Finally, in connexion with the relationship of exercise to digestion, the subject of stitch is pertinent. This phenomenon described in these columns[4] as an acute physiological visceroptosis, is a painful sensation arising from strain upon the coronary and other peritoneal ligaments, produced by the weight of the heaviest viscera in the erect attitude. And although jerkiness and vibration and motor irregularities of all kinds are the prime determining factors, anything which contributes to the weight of a viscus will be an additional factor of importance. It is not surprising, therefore, that stitch is likely to come on when exercise follows soon after a heavy meal.

NON-TOXICITY OF FORMOL-TOXOID

FORMOL-TOXOID, the anatoxin of Ramon, is prepared by digesting diphtheria toxin with formaldehyde. The resulting product, whilst completely or almost completely non-toxic, retains unimpaired the antigenic value of toxin. Anatoxin, the preparation generally used for prophylaxis on the continent and in Canada, is injected subcutaneously in doses which range from 0·5 to 1·5 c.cm. That it is devoid of toxicity even if injected by inadvertence in massive doses appears to be conclusively shown by an experience recorded by E. Aubertin and P. Boudou.[5]

> A young workman contracted faucial diphtheria of moderate severity. The clinical diagnosis was confirmed bacteriologically by the Pasteur Institute at Bordeaux, and the practitioner decided to inject diphtheria antitoxin. A neighbouring chemist was asked for a supply, but found that he was out of stock. Remembering, however, that he had some 10 c.cm. ampoules of anatoxin intended for the immunisation of children in the town, he sent a number of

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[1] Guy's Hosp. Rep., 1928, lxxviii., 279.
[2] Amer. Jour. Physiol., 1932, cii., 258.
[3] Brit. Jour. Radiol., December, 1932, p. 869.
[4] THE LANCET, 1932, i., 1209.
[5] Paris Méd., Nov. 12th, 1932, p. 393.

impulses from the moving muscles. Further experiments on animals demonstrated increased ventilation as a result of increasing the pressure in the right auricle, provided the vagus was intact. In cardiac disease the venous pressure is very often higher at rest than in normal persons, and undergoes a greater rise on exertion. The results of the author's investigations lead them to the conclusion that the cardiac patient experiences dyspnœa on mild exertion through a threefold mechanism: diminished vital capacity, afferent impulses from the moving muscles, and increased venous pressure in the right side of the heart. The second factor is in operation in the normal person, and only the first and last are peculiar to the cardiac patient. But the conclusion that the data presented are evidence against "the widely accepted but erroneous theory that the symptoms of cardiac failure are essentially and primarily due to a diminution in the minute output of the heart," does not seem to be sound. For increased venous pressure is after all generally accepted as indicating a diminished capacity for work on the part of the heart, while diminished vital capacity in heart disease is itself attributed to venous engorgement of the lungs.

PER-URETHRAL OPERATIONS ON THE PROSTATE

THE key to success in per-urethral operations is the proper selection of cases. Dr. T. J. Kirwin,[1] whose paper is conspicuous for its restrained judgment on this controversial subject, believes that the per-urethral approach is suitable for the following types of obstruction: contracted bladder neck, median bar obstruction, enlargement of the middle lobe of the prostate with slight lateral lobe hypertrophy, subcervical gland hypertrophy, carcinoma of the prostate, congenital urethral valves, slight lateral lobe hypertrophy, and cases of obstruction where, for some reason or other, total prostatectomy is contraindicated. Outside these bounds, he says, the surgeon is likely to meet with difficulty from hæmorrhage both during and after the operation; moreover, the results are uncertain, and when a long time is spent in removing masses of tissue so great a strain may be thrown on the patient that his life is endangered. In discussing technique, Kirwin is emphatic about the advantage of a current of low amperage. If high-amperage currents are employed the effects of the heat generated are felt far beyond the area actually resected. Fluid in the tissues is converted into steam which scalds and otherwise damages the surrounding bladder neck, and this damage may be followed by sloughing, cicatrisation, and eventually contraction of the tissues. Unfortunate sequelæ of this kind are obviated by the employment of radiothermy of low amperage. The instrument he uses is one of his own device. It has an outer sheath of bakelite, and the resection is done by means of a wire electrode which rotates across a large window in the ventral aspect of the outer sheath. This electrode rotates along a circumference corresponding to a 32 French catheter, the calibre of the instrument itself being only 28. By this means a sheath can be used of several sizes smaller than would otherwise be possible for obtaining so large a cut.

Besides laying stress on the need for care in the selection of cases he draws special attention to the importance of adequate pre-operative measures. If per-urethral resection is regarded as minor surgery, disaster is likely to follow. Post-operative drainage is secured by the introduction of a whistle-tipped catheter large enough to exert pressure on the walls of the posterior urethra and diminish post-operative oozing. Employing this technique, Kirwin has had 3 deaths in a series of 70 cases; the first patient dying of cerebral hæmorrhage, the second of myocarditis, and the third of peritonitis. Post-mortem examination of the last of these fatal cases showed a rent in the posterior urethra.

THE PROGNOSIS FOR FRACTURES OF THE VERTEBRÆ

THE fate of 304 insured persons whose fracture of the vertebral column was notified in the ten-year period 1918–27 has recently been analysed by Prof. J. Akerman,[1] chief medical officer of the Swedish Government insurance bureau, which deals with about 75,000 accidents every year. His analysis ignores partial fractures of the axis, the apophyses, the sacrum, and accidents complicated by fractures of the skull, pelvis, large bones of the limbs, or by lesions of the internal organs, and the cases in which death followed so quickly that there was no time to examine or treat the patients are also excluded. All the patients, of whom 274 were men, were treated in public hospitals, and the diagnosis was verified by repeated X ray examinations. The cervical vertebræ were involved in 68 cases, the dorsal in 102, and the lumbar in 134. The fatal cases numbered 68. The total mortality was 22 per cent., divided as follows: lumbar region 12 per cent., dorsal region 22 per cent., and cervical region 44 per cent. In 112 patients a recovery was effected without a degree of invalidism exceeding 10 per cent. In all the cases terminating fatally taken together, the average duration of life after the accident was 43 days, and in cases of fracture in the cervical region it was ten days. These averages are vitiated by a few cases in which the patients survived for several months; most of the patients who died did so after only two or three days. The difference between the temporary compensation and the permanent compensation finally allowed was only about 10 per cent.—a finding which shows that there is not much to be hoped for in the way of late recoveries.

LONGEVITY AFTER CORONARY THROMBOSIS

TWENTY years ago myocardial infarction from coronary obstruction was held to be of interest only to the pathologist; clinically it received attention merely as a cause of sudden death. Since the war, however, it has become generally recognised that acute coronary obstruction has a well-defined clinical picture; and now that it can be diagnosed during life we have learnt that it is by no means always fatal. A good example is a case just reported by Dr. Paul D. White,[2] in which a man had a typical attack at the age of 63. He made a perfect recovery, and two years later was passed for life insurance despite a very careful examination of his heart. At the age of 72 he did a great deal of mountain climbing, and his average time for a climb of 3000 feet over a distance of five miles was two hours and a quarter. Eleven years after the attack he began to suffer anginal pain on exertion. By modifying his life and living at a lower level he progressed well until, at the age of 80, he died in a few days from a cerebral hæmorrhage. Post-mortem examination revealed an old occlusion of a branch of the right coronary artery

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[1] Amer. Jour. Surg., January, 1933, p. 1.

[1] Acta Chirurgica Scandinavica, vol. lxxi., Fasc. i.–vi.

[2] Jour. Amer. Med. Assoc., Jan. 28th, p. 233.

SPECIAL ARTICLES

THE EFFECT OF PASTEURISATION UPON THE NUTRITIVE PROPERTIES OF MILK

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Since milk is chemically very complex it can hardly be anticipated that heat will be without any effect upon its composition. The practical question is whether any changes result which affect the nutritive qualities of cow's milk as a food for man.

The expression "pasteurisation" is often employed without exact definition and not always in reference to the same heat action. In this paper, unless otherwise stated, it is used as the official definition of the Ministry of Health. This involves heating the milk to 145° F. and holding it between 145° F. and 150° F. for 30 minutes, after which the milk is rapidly cooled.

Changes Produced by Pasteurisation

A good deal of confusion in the past has been caused by writers discussing, without any clear distinction, changes produced at various temperatures, including the boiling of milk, and not merely changes induced by pasteurisation. These contributions have to be excluded unless they include results obtained at pasteurisation temperatures. Only the latter are here under consideration.

No changes have been reported in the fat, apart from slight physical alterations which may cause the cream to rise less readily. The milk proteins are not altered, apart from the fact that a very small proportion (round about 5 per cent.) of the lactalbumin becomes insoluble, but there is no evidence that it is rendered less digestible. The lactose is not affected. The only constituents round which discussion centres, and which have to be considered, are the mineral constituents, the enzymes, and the vitamins.

MINERAL CONSTITUENTS

Bell (1925),[1] using the method of filtration under pressure through a Pasteur-Chamberland filter, obtained very small losses of diffusible calcium and of phosphorus, but not beyond the limit of experimental error. Much greater variations were found when the milk was centrifugalised. Magee and Harvey (1926)[2] found that about 26 per cent. of the total calcium oxide is in the diffusible or soluble form in fresh milk, pasteurisation (65° C. for 30 minutes) reduces this to about 20 per cent. The losses in soluble calcium were believed to be due to the formation of a colloidal form of calcium phosphate. Mattick and Hallett (1929)[3] found that at 145–150° F. the amount of the total calcium which becomes indiffusible is about 2 per cent., while the evidence of any change at pasteurisation temperatures in diffusible phosphorus is inconclusive. Their tables show that the total calcium is not reduced, and that only 25 per cent. of the calcium is in a diffusible form. The reduction in the percentage of diffusible calcium is 9·5 per cent. Bell's figure for diffusible calcium was 23·8 per cent. (as CaO), while Magee and Harvey quote Kona and Michallis 44 per cent. (CaO) and Grosser 23·4 per cent.

These results suggest that only about 25 per cent. of the calcium of cow's milk is present in a diffusible form, and that the effect of pasteurisation is to slightly alter this proportion by reducing the diffusible fraction by about 6 per cent., estimated as CaO. There is no evidence from these reports that this calcium is lost or that this small change in the diffusible proportion affects the availability of the calcium, but this point is discussed in the section on animal experiments. Magee and Glennie (1928)[4] estimated the iodine in 135 samples of fresh milk, and these showed considerable variations from 4·2 to 7·46 γ per 100 c.cm., the average being 5·69. With pasteurised milk the variations were from 3·68 to 5·90, the average being 4·51. These figures show an average loss of 20 per cent. This was evidently due to volatisation. Unfortunately no information is given either as to the pasteurisation temperatures or as to the method of pasteurisation—i.e., if open or closed. Approximately 83 per cent. of the total iodine of separated cow's milk was found to be in diffusible form.

ENZYMES

Most of the numerous investigations deal with temperatures above those of pasteurisation, and their general tendency is to show that at 150° F. they are not destroyed. Peroxidase is definitely not destroyed (Zilva and others). Mattick and Hallett[3] found that milk heated to pasteurisation temperature showed delay in the time of coagulation to rennet, a point of interest for cheese-making but of no significance from the human nutritive aspect.

Allen (1932),[5] in his valuable survey, points out "very few accurate data appear to be available on the effect of heat on the enzymes of milk, so that it is impossible to say in most instances to what extent pasteurisation may induce inactivity." In any event, the point would appear to be purely of academic interest as there seems to be no evidence that their presence is of any importance in human feeding. (For a review of this question see Lane-Claypon, 1916.[6])

VITAMINS

While milk contains all the vitamins they are very unequally present in it. Vitamin A is abundant in milk and is not affected by the temperature of pasteurisation. The amount of vitamins B_1 and B_2 in milk vary, being affected by the food of the cow. B_2 is particularly heat stable, but B_1 also possesses considerable resistance to heat. The report on vitamins[7] published by the Medical Research Council last year remarks: "There is general agreement that the resistance of vitamin B_1 to heat in faintly acid or acid media is considerable. Most observers have detected little or no destruction of the vitamin after exposure to 100° C." Even with milk heated for some time at high temperatures, round about 100° C., such as evaporated milk, the work of Samuels and Koch (1932)[8] shows that only about one-sixth to one-fifth of the antineuritic heat-labile fraction (B_1) is destroyed. At pasteurisation temperatures there is no evidence of any destruction.

Vitamin D is very variable in milk, and under certain conditions of diet and feeding there may be very little in milk. There is no evidence that it is affected by pasteurisation.

Vitamin E is present in milk, and the Medical Research Council report remarks: "Vitamin E appears to be remarkably stable to heat, resembling in this respect vitamin A."

Vitamin C is the least heat stable of the known vitamins. The earlier reports suggest that most of this vitamin is destroyed at a low temperature, but, as with other vitamin heat studies—i.e., as regards canned foods—further investigations show that this extreme view must be modified. Schwartze, Murphy,

> these instead, thinking that they would answer the purpose equally well. The unsuspecting practitioner injected subcutaneously a first dose of 100 c.cm. of what he believed to be antitoxin, and on the following day a further 50 c.cm. It was only when casually examining the labels of some of the remaining unopened ampoules that the mistake was discovered. After the first dose the patient complained of slight local pain in the abdomen, the site of injection. This was quickly succeeded by signs and symptoms of severe shock; pallor and drawn features, irregular and uncountable pulse, dilatation of the pupils, and abdominal pain. The shock was of short duration, but the patient remained in an exhausted condition for the rest of the day. In the evening there was some rise of temperature and some spread of the membrane. The patient had a restless night, but next morning was very much better. The membrane had almost entirely disappeared, the pulse was good, and the temperature barely above normal. He had passed a litre of urine free from albumin. Although satisfied with the progress of the case, the doctor determined upon a second injection. This immediately produced shock which was, however, far less severe than that of the preceding day. The following morning the last remaining traces of membrane were readily detached, and the general condition of the patient was very satisfactory. At the site of the first injection an area of œdema and redness with a radius of 10 cm. was noted. The patient made an uninterrupted recovery.

Aubertin and Boudou emphasise this history as evidence of the non-toxicity of anatoxin. They note that the reactions to which its injection in prophylactic doses on occasion gives rise are allergic in nature, and clearly in the case described the shock from which the patient suffered was allergic. They point out that in diphtheria, at any rate, allergy and immunity are two separate processes which may coexist. Although the former is often manifest earlier than the latter, there is no evidence that it prepares the way. Some have held that the abortive, *formes frustes* of the disease are allergic in character, but Aubertin and Boudou think rather that they are to be explained as the beginnings of immunity. (Whether the abortive attack occurs in a subject who is completely non-immune or who has, as is more probable, a certain degree of basal immunity, there is certainly an antigenic response and a step, at least, towards immunity is thereby taken.) A. T. Glenny[6] has shown that the antigenic response to diphtheria and other toxins varies greatly according to whether the stimulus is primary or secondary. After primary injection of toxin into an animal no antitoxin can be demonstrated for three weeks, but if then a second injection is made, the antigenic response is not only much quicker but much greater. The latent period is reduced to three days, at the end of which the antitoxin curve rises steeply. It would seem that in the present case, the large dose of anatoxin in addition to causing allergic shock had the effect of a secondary stimulus. As a result, the patient's antitoxic titre increased rapidly and effected his clinical cure. Although Aubertin and Boudou do not allude to the important work of Glenny, they suggest the same process in other terms and consider that it might be of interest to inject anatoxin in cases of diphtheria with or without concomitant antitoxin therapy.

This claim that anatoxin can do no harm was made before the accident which followed its employment at Bourbon Lancy, near Charolles (Saône et Loire) just before Christmas and attracted much public attention. The facts, as given by the French Ministry of Health on Jan. 28th, are these. A child who had been vaccinated with diphtheria anatoxin supplied by the Pasteur Institute had died, and seven others had been ill, but had recovered. Since the anatoxin used was part of a large batch, and no other mischances had been reported, the Ministry presumed that the accident was due to lack of necessary precautions. It appears that the child who died had previously been in indifferent health; the seven others had signs of severe infection at the site of injection in the thigh, which for some reason had been selected instead of the usual site at the back of the arm or shoulder. None of the other children in the village who had been vaccinated with the same material by other medical men had shown similar symptoms. The further inquiry which is in progress should clear up any doubt.

CHILDREN AND THE ECONOMIC DEPRESSION

QUESTIONS in Parliament have elicited replies from the Minister of Health and the President of the Board of Education that the effect of the economic depression on the health of school-children is being carefully watched, and that special inquiry on the lines of the League of Nations' memorandum is unnecessary. Both State departments pointed to the information available from official and other sources, amongst which is the report presented to the L.C.C. education committee on an inquiry conducted last December into the nutrition of children in a poor part of the East End of London. Nine families were selected for investigation by experienced social workers, the number of children being 25, none of them being fed at school. Although the nutrition of seven was found to be below the average, in no case did this appear to be due to general lack of nourishment; rather was it associated with illness. This committee is arranging for similar inquiries to be carried out in other districts of London, to be the subject of a fuller report later. A more extensive inquiry into the effect of unemployment on children in distressed areas is being organised by the Save the Children International Union, the results of which should be available by the end of May. In the meantime no doubt some of the reports of medical officers of health and school medical officers for the year 1932 will have appeared. Information is now available for Glasgow in a report on the education health service for the year ended July 31st, 1932; this contains a paragraph stating that no evidence of deterioration has been observed in the nutrition of the school-children as judged by average heights and weights, although rickets of a minor degree had shown a tendency to increase among the pre-school population. Other areas seem to have noted a similar increase of rickets in young children. The cold spell of the last few weeks will have thrown a greater strain on small household budgets, and is likely to make more manifest the under-nourishment present in children who are ill-clad and therefore likely to suffer from the cold. It may be, as Dr. F. L. Keith has satisfied himself for Deptford, that the mothers are increasingly starving themselves for the benefit of the children, and those public assistance committees are to be commended which make the feeding of school-children supplementary to transitional benefit rather than part of it. We find it disquieting to learn from the Parliamentary Secretary to the Board of Education that the number of free milk meals provided in Lancashire fell from 199,000 in November to 145,000 in January.

INDEX TO "THE LANCET," VOL. II., 1932

THE Index and Title-page to Vol. II., 1932, which was completed with the issue of Dec. 31st, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 7, Adam-street, Adelphi, London, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

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[6] Jour. of Hyg., 1924, xxiv., 301.

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As regards vitamin C human milk is probably a better source than cow's milk, but there is evidence that this vitamin may also be deficient in human milk.

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Magee and Harvey (1926).[20] Their results are interesting as showing the unsuitability of cow's milk for the young pig. Cow's milk contains on an average 0·16 per cent. CaO, and 0·24 per cent. P_2O_5 with a ratio of 1 : 1·5, whereas sow's milk contains 0·39 per cent. CaO and 0·36 per cent. P_2O_5, a ratio of 1 : 0·92. A young pig on a diet of cow's milk and cereals showed signs of rickets after 30 and Hann (1929–30)[9] found that by lightly boiling 3 quarts of milk for five minutes, after being brought to the boil in about 20–27 minutes in a glass beaker or in an aluminium pan, only 20 per cent. of the vitamin C was destroyed. This is a severer temperature test than pasteurisation.

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When these changes are all set down the essential fact which emerges is their comparative insignificance. What they amount to is that the already large proportion of insoluble calcium is increased by about 6 per cent., and possibly there is a similar change in the proportion of insoluble phosphorus. The very small and variable amount of iodine may be reduced by 20 per cent. There is some reduction of vitamin C. There is no evidence of any other significant changes. It may also be pointed out that these changes are much less than the natural variations which occur in different samples of cow's milk. If we are to attach the importance which some would have us do to these slight changes which result from pasteurisation, it is evident that the agricultural interests will have to accept the view that milk to be of value to man must be from cows so fed and treated that their vitamin content is up to standard and that other constituents cannot be neglected.

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Vitamin A is abundant in both human and cow's milk. The B vitamins are usually adequate in amount in both milks, but in the Medical Research Council Report[7] the authors quote results from Detroit dealing with the amount of human milk required to prevent anti-vitamin symptoms in rats, and state "these results give an indication that human milk may easily be poor in vitamin D and in the B-vitamins. In point of fact there is good evidence that infants at the breast may in some cases suffer from lack of these vitamins." According to Outhouse, Macy, and Brekke (1928),[14] the ratio of calcium to phosphorus is a factor in rats as well as lack of

The insistent demand for calcium by the growing rat is clearly shown by the work of Sherman and MacLeod (1925).[25] They found for the rat that

> "in round numbers the percentage of calcium in the body is found to increase from 0·25 per cent. at birth, to about 0·6 per cent. at 15 days; about 0·7 per cent. at 30 days, 0·75 to 0·85 per cent. at 60 days; 0·95 to 1·1 per cent. at 90 days, and 1·0 to 1·2 per cent. in the adult animal."

While pregnancy does not make such great demands on the rat owing to the little bone in the new-born rat, lactation, owing to the need to supply a milk so rich in calcium, causes a serious drain, as is evident from other results of Sherman and MacLeod, and more specifically in the work of Macomber (1927),[26] who fed rats on a diet intentionally low in calcium. Under these conditions he found that the mother rapidly lost calcium from her body to supply the needs of the growing young, but the young were not able to get all they required and showed signs of lack of calcium by stunting, weakness, and often death.

The same fact is brought out from another angle by Sherman and Muhlfeld (1922)[27] when they showed the superiority of a diet of one-third whole-milk powder, two-thirds ground whole-wheat over one of one-sixth whole-milk, five-sixths ground whole-wheat, measured by increase of young and percentage successfully suckled.

The importance of adequate calcium in the food for young production applies to other animals. For example, Hart and Steenbock (1919)[28] found that lack of calcium in the ration of pigs and cows caused premature births of dead or weakly young.

Since stress is laid by the opponents of pasteurisation upon the diminished fertility of rats fed with boiled milk and upon the allegation that similar results occur when pasteurised milk is used, it is worth while to refer to the considerable literature showing the unsuitability of cow's milk in any form for the rat.

Sherman, Rouse, Allen, and Woods (1919–20)[29] found that young rats on a bread and milk ration, with milk comprising one-fifth of the total calories, made normal growth, but the females usually failed to breed and no young were raised. When the food was altered so that the milk formed two-fifths of the total calories and the rest by ground whole-wheat the young were suckled without undue loss. Mattill and Conklin (1920)[30] found that on fresh milk rats made good initial growth but, beginning between the 50th and 100th day of life, especially in the females, there was a decided retardation, while there was no reproduction. The addition of iron citrate improved growth but reproduction was not successful. With dried milk (a heated milk) and 1 per cent. yeast they obtained normal growth and partially successful reproduction. Mattill, Carman, and Clayton (1924)[31] found this inability to reproduce associated with a milk diet high in fats. Waddell, Steenbock, Elvehjim, and Hart (1928)[32] used as a basal diet whole cow's milk fed fresh every morning, *ad libitum*. Their results showed good growth for four to six weeks, then the weight became stationary, then declined rapidly. With cessation of growth was a marked anæmia with a marked reduction of hæmoglobin. In a later paper (1928)[33] they showed that ashed residues of beef liver and other substances fed with milk cured the anæmia. Waddell, Steenbock, and Hart (1931)[34] found that young rats when kept on a diet of whole unheated milk develop a severe anæmia in the course of a few weeks. While the addition of small amounts of the salts of iron and copper effectively prevented the anæmia, it was found that even with these additions growth and reproduction were still subnormal. Waddell (1931)[35] remarks that total sterility in male rats has been observed on a diet of cow's milk supplemented with small amounts of iron and copper salts. This sterility is characterised by the complete disappearance of the germinal epithelium, great loss in the amount of testicular tissue, and pronounced œdema. He concludes that this sterility is not due to lack of vitamin E.

These experimental results are quoted merely to show how complicated is the problem of anæmia and faulty reproduction in the rat in relation to milk feeding, and the absurdity of basing conclusions as to pasteurisation effects upon slight differences as regards these factors with rats fed upon milk. It is obvious that new unheated milk is unsuitable as a diet for an animal like the rat which grows with great rapidity and reaches maturity at a very early age. Cow's milk does not supply the essential substances in sufficient quantities.

On the general question of the suitability of these animal experiments to obtain findings applicable to man the position is, I believe, clear-cut. When feeding experiments are made with any animal whose normal calcium requirements are equal to or in excess of the calf, the slight diminution in the available calcium of the milk which pasteurisation effects is likely to show itself by diminished growth and other symptoms. To suggest, however, that such results are applicable to man is to ignore the essential fact that the human infant needs much less calcium and phosphorus than are present in cow's milk as shown by the composition of human milk. There is nothing in any of these experiments to indicate that any unknown substance is destroyed by pasteurisation. All the results (such as they are) are explainable on a diminution of calcium and phosphorus fed to experimental animals whose need of these substances is much greater than man. They offer no evidence which can be applied to man.

[In the remaining sections of his paper, which will appear next week, Dr. Savage relates what direct evidence is available on the question whether the value of milk is diminished for the child by its pasteurisation, and discusses the practical bearing of the ascertained changes due to pasteurisation. References are given to all the work quoted.]

MEDICINE AND THE LAW

Liability for Shock without Physical Impact

In the High Court last week a plaintiff was awarded £700 damages for nervous shock due to the fall of a quantity of window glass from a firm's premises. The firm admitted that the glass fell and that it constituted a nuisance; but it did not admit that the plaintiff had suffered nervous shock in consequence, as she alleged. The brief report leaves the facts obscure; the case, however, seems to have been one where personal injury consisted of shock without physical impact. Not every startling accident, of course, gives a right of action; there must be some breach of duty by the defendant (some negligence, for instance) if the plaintiff is to succeed. The damage, moreover, must not be too remote.

In the nineteenth century the courts were disinclined to allow damages for mere shock. It was difficult to prove the incidence of the invisible injury, and there was perhaps what Lord Atkin has called "a belated psychology which falsely removed mental phenomena from the world of physical phenomena." The law was reluctant to give a right of action for the days. The addition of a soluble calcium salt to the diet of cereals enabled the animals fed on it to remain in a thriving condition for 60 days. Under experimental conditions the retention of calcium, phosphorus, and nitrogen was lower with heated milk than with either fresh or sour milk. On the other hand, the addition of calcium chloride to the pasteurised milk caused an increase in the amount of calcium retained which was more than twice the amount added, so that the calcium retention was greater than when fresh or sour milk was given.

ON CALVES

Orr, Crichton, Crichton, Haldane, and Middleton (1926)[10] carried out a series of feeding experiments with calves. The pasteurised milk was from the same source as the raw but pasteurised in one experiment by the "flash" method and in two by the "holder" procedure. They found a lessened increase of weight with pasteurised as compared with fresh milk, but this could be entirely obviated by the addition of calcium lactate to the pasteurised milk. All the calves receiving either fresh milk or pasteurised milk plus the soluble calcium salt remained in perfect health. Those receiving pasteurised milk were not in such good condition as the others, while in one experiment the animals showed definite signs of malnutrition.

ON GUINEA-PIGS

Schroeder (1913)[21] used 467 guinea-pigs, removed from their mothers immediately after they were born and divided into three groups.

Group 1.—155 guinea-pigs fed raw milk.
„ 2.—156 „ „ pasteurised milk.
„ 3.—156 „ „ boiled milk.

The *pasteurisation temperature was 60° C. for* 20 minutes. The experiment extended over a period of ten months. Weight and mortality were the two signs measured (Table II.).

TABLE II.—*Percentage Mortality among the Guinea-pigs*

Mortality.	Young with mothers. Per cent.	Young fed artificially on cow's milk.		
		Raw. Per cent.	Pasteurised. Per cent.	Boiled. Per cent.
First 10 days	4·0	27·74	30·13	27·56
„ 20 „	5·0	40·00	46·16	39·74
„ 30 „	6·0	45·62	51·28	42·95
First year	14·0	52·90	53 85	46·79

The percentage death-rate for the guinea-pigs left with their mothers is based on the young born alive, weaklings as well as others, but no weaklings were selected for the artificial tests. As regards weight, the boiled milk weight record is distinctly better than that of either the raw or the pasteurised milk and the pasteurised drop a little behind the raw.

Schroeder makes the suggestion that possibly the better records with the boiled milk is due to the fact that the milk of a foreign species may contain objectionable elements for another species, and that these are eliminated by the heating. It is an interesting suggestion, but in view of the fact that there was evidence of *Brucella abortus* being present in the raw milk it cannot be accepted as more than a possibility.

THE QUESTION OF THEIR VALIDITY

These animal experiments (particularly with the rat) are so frequently cited by opponents of pasteurisation as evidence that this process damages milk as a food for the human child, that it is necessary to discuss some of the nutritional factors involved which bear upon the validity of these experiments as applied to man.

The needs of the growing animal for proteins, calcium, and phosphorus (to consider *only* certain elements) are conditioned by the rate of growth and by the relative development of bone and of soft tissues. These needs are reflected in the composition of the milk, and Sherman (1927)[22] gives Table III., mainly from the work of Bunge and Abderhalden.

TABLE III

Species.	Days required to double birth weight.	Percentage composition of the milk.			
		Protein.	Ash.	Calcium.	Phosphorus.
Human .	180	1·6	0·2	0·02	0·02
Horse ..	60	2·0	0·4	0·09	0·06
Cow ..	47	3·5	0·7	0·12	0·09
Goat ..	22	3·7	0·78	0·14	0·18
Sheep ..	15	4·9	0·84	0·18	0·11
Swine ..	14	5·2	0·80	0·18	0·14
Rabbit .	6	14·4	2·50	0·65	0·43

The slowly growing human child shows a very low calcium and phosphorus content in its milk as compared to the cow.

Not only is this the case for different species, but we get similar fluctuations in the composition of the milk during lactation to meet the requirements of the young. For human milk this is brought out in *Table IV. from Holt, Courtney, and Fales (1915)*[23]

TABLE IV.—*Human Milk During Different Periods of Lactation*

Stage.	Protein.	Ash.	CaO.	P_2O_5
Colostrum (1–12 days) ..	2·25	0·31	0·0446	0·0410
Transition (12–30 „) ..	1·56	0·24	0·0409	0·0404
Early mature (1–4 mths.)..	1·15	0·21	0·0486	0·0342
Middle mature (4–9 „)..		0·21	0·0458	0·0845
Late mature (10–12 „)..	1·07	0·20	0·0390	0·0304

These facts apply to the cow and other animals but are particularly striking as regards the rat, and as this animal is so much used in nutrition experiments it is important to realise their cogency in relation to pasteurisation.

The rat is an animal which is born largely cartilaginous, and which arrives at sexual maturity when only about 60 days old. It grows at a great rate, and its call upon a very rich milk with abundant calcium and phosphorus is insistent. Hatai (1927)[24] gives the figures for the milk shown in Table V.

TABLE V

Species.	Water.	Percentage composition of solids.			
		Protein.	Fat.	Lactose.	Ash.
Man	87·58	16·22	30·1	51·28	2·39
Cow	87·17	27·68	28·76	38·03	5·53
Rat	54·12	22·11	69·13	5·31	3·50

Unfortunately he does not give the calcium or phosphorus content, but the figures show the enormously high proportion of solids.

a concomitant invader. Rich suggests that this organism, the Bordet-Gengou bacillus, and the influenza bacillus tend to localise in the cilia of the trachea and bronchi, and provoke coughing by the irritative effect of their presence in this sensitive site. Whether or not *Hæmophilus pertussis* is the causal organism, Gardner and Leslie were able to detect it in at least three out of four cases in the early stages of the disease by a single examination, using the cough-droplet or cough-plate method and the Danish modification of the original Bordet-Gengou medium; these results are comparable with those of H. Madsen (1924) and Sauer and Hambrecht (1930) in a much longer series of cases. A. R. Thompson,[4] on the contrary, with the same method and the same medium, freshly prepared, obtained only 7 positive results out of 64 cultures taken during the catarrhal and early spasmodic phase. A. Sundal[5] commonly uses two plates for each child, since he has found that colonies may develop upon one and not upon the other.

With the proviso that a negative result is not conclusive, the cough-droplet method may be accepted as a valuable means of diagnosis of the disease at a period of great infectivity, and when signs and symptoms present nothing characteristic. It is true that leucocytosis, with relative lymphocytosis, occurs quite early in whooping-cough, but even if facilities are available, a high lymphocyte count in very young children may be no more than suggestive, whereas recovery of the *H. pertussis* is conclusive of infection. In the spasmodic phase the diagnosis can hardly be in doubt, but R. Neurath[6] draws attention to the difficulties in infants and adults in whom the disease may remain quite atypical but nevertheless infective.

PROPHYLAXIS

There is difference of opinion as to the prophylactic value of vaccines prepared from *H. pertussis.* H. Madsen and his co-workers have reported a considerable measure of success upon a large scale, and R. Steindler[7] mentions a number whose experience has been similar; others, however, have had no success at all. Gardner and Leslie point out that unless the vaccine is prepared from organisms in the correct antigenic phase it is useless, and it is noteworthy that those who have reported favourably upon vaccine prophylaxis have either obtained the products of certain laboratories or have taken great care to see that they used freshly prepared vaccines from suitable strains. Old stock vaccines are valueless. Sundal gives an instructive account of vaccine prophylaxis in a children's home at Oslo. There were 32 children in the home, of whom 10 had a previous history of the disease. Two children began to cough; the plates were positive. From the organisms so recovered a vaccine was prepared (1000 millions per c.cm.) and injected both into these two children and into the remaining 20 susceptibles in a first dose of 0·5 c.cm. and two succeeding doses of 1·0 c.cm. at intervals of four days. The two children were not isolated, but played and ate with the others. These two developed marked cough with vomiting shortly after the last injection. Four others, between one and two weeks after the last injection, developed conjunctivitis and a cough without whoop. The other 16 children remained free from symptoms. Sundal thinks that it is not reasonable to suppose that without the vaccine these children, with no previous history of infection, could have remained exposed to massive infection without evident whooping-cough developing. L. Sauer,[8] using only vaccines prepared from recently isolated strongly hæmolytic strains grown upon human blood and the like, has injected, during the last four years, about 300 non-immune children without any untoward symptoms. Sauer finds that the vaccine, like the disease, produces a high lymphocytosis. Discussing results, he distinguishes carefully between "certain" and merely "probable" exposure. Only when the patient disseminates the bacilli, and the exposed child in the immediate environment (within a foot or two) aspirates the germ, does actual exposure occur. Sauer gives details of eight injected children of five families and six non-immune controls. All six controls (and a mother) "developed unquestionable whooping-cough from two and a half months to three years after their brothers and sisters had been injected." With one possible exception none of the injected children developed any sign or symptom, although they were daily exposed to the patients throughout the incubation, catarrhal, and paroxysmal stages. Amongst 127 injected children who experienced transient or accidental exposure none developed whooping-cough. Further work with suitable vaccines under adequately controlled conditions is clearly called for.

THERAPEUTICS

A sure sign of the weakness of the therapeutic case is the employment of a multiplicity of dissimilar remedies for the same disease. In the therapy of whooping-cough, counsel is darkened by premature enthusiasm for this specific or that. Steindler recalls the advice of Reitschel, that judgment of any whooping-cough remedy should only be based upon the results obtained in infants and children up to 2 years of age observed under proper clinical conditions, older children and ambulant cases being excluded from consideration. Several recent writers stress the psychological effect of injections in older children. W. Kaupe,[9] like Steindler, is favourably impressed with the therapeutic value of vaccines, and thinks that any psychological influence is purely secondary, since he has obtained good results in infants. W. Bayer asserts, upon the same page, that he has seen equally good results follow injections of distilled water. H. Steurnthal[10] has had such marked success with intramuscular injections of quinine combined with a small amount of oil of turpentine that he has not found it necessary to try vaccines. Some years ago J. Audrain advocated intramuscular injections of ether, and undoubtedly some cases respond temporarily, but ether injections are not only painful, but are generally held to be liable to cause abscesses, although this is not the experience of Sundal. E. Lorenz[11] tried Goldbloom's method of rectal injections of ether in olive oil (2 c.cm. of anæsthetic ether in 15 c.cm. of oil twice daily). He obtained no significant results after a fortnight's treatment of a series of 21 children. Others however have had partial and temporary success with this method, but, in order to be effective for more than a day or two, it is necessary steadily to increase the dose of ether.

As Neurath remarks, the pharmacology of the treatment of whooping-cough fills volumes. It is clear that the last volume has not yet been written. The mere sensation of fright lest, as was said in Victorian Railways Commissioners *v.* Coultas (1888), a wide field should be opened to imaginary claims. Mrs. Coultas saw a train approaching at a level crossing; being put in peril by the railway's negligence, she thought she was going to be killed. The Privy Council held that damages arising from mere sudden terror, unaccompanied by any actual physical injury but occasioning a nervous or mental shock, could not be deemed legally to flow from the railway servant's negligence. A different view was taken in Pugh *v.* London and Brighton Railway (1896) where a signalman was incapacitated through shock due to the excitement and alarm of successfully averting a train smash. He was never in personal danger himself but he was held to have been incapacitated from employment by reason of accident. In 1901 the decision in Dulieu *v.* White awarded damages to a woman who was sitting behind the bar in a public-house when a horse-van, negligently driven by defendant's servant, dashed into the premises. She was untouched, but she sustained shock and gave birth to a child prematurely. She succeeded in her claim though there was still a hint that she would have failed if she had proved no more than a "merely transitory mental emotion." There may be other faulty conduct on the part of a defendant, apart from negligence. Wilkinson and Wife *v.* Downton (1897) was a case of a silly practical joke. Defendant, as the jury found, falsely and maliciously told a woman that her husband had met with a bad accident and broken both his legs; she suffered a severe shock on hearing the news, and was held entitled to succeed. Somewhat similar was the decision in Janvier *v.* Sweeney and Barker (1919). Sweeney, a private detective, instructed Barker to endeavour to induce Mlle. Janvier to show him certain documents. Barker tried to achieve his object by threats and false statements. He pretended he came from Scotland Yard. "You are the woman we want," he said; "you have been corresponding with a German spy." Plaintiff said she had so bad a shock that she suffered from neurasthenia and shingles. She sued for damages and succeeded, the judges definitely discountenancing the decision in Victorian Railways Commissioners *v.* Coultas, on which the defendants relied.

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[4] Ann. Rep. M.O., London County Council, 1930, vol. iv. (Part 3), p. 129.

[5] Acta Pædiat., 1932, xiv., 104.

[6] Wien. klin. Woch., 1933, xlvi., 113.

[7] Med. Klin., 1932, xxviii., 1709.

[8] Jour. Amer. Med. Assoc., Jan. 28th, 1933, p. 239.

[9] Med. Klin., 1932, xxviii., 1640.

[10] Ibid., p. 1425.

[11] Deutsch. med. Woch., 1932, lviii., 1443.

We see therefore that A may owe a duty to B not to inflict a mental shock on him or her and, if A nevertheless inflicts the shock on B and physical damage ensues, B may have a legal right of action even though (in Lord Phillimore's words) "the medium through which the damage has been inflicted is the mind." One interesting case raises wide questions. In Hambrook *v.* Stokes Bros. (1925) a lorry had negligently been left on a slope at Folkestone with the wheels straight and the engine running. It started off by itself and injured a little girl. Her mother knew the girl was in the road; the mother did not see the accident but she heard the progress of the lorry, which eventually came to a stop close to her; when told by a by-stander of the little girl's injury she knew it was her child. The mother became hysterical through shock and died ten days later in hospital. The judge told the jury that unless death was due to shock caused by fear of harm for herself as contrasted with fear of harm for her child, damages were not recoverable. The Court of Appeal, by a majority decision, held that this was a misdirection. The husband could recover damages if he could prove that his wife's death resulted from shock caused by the lorry running away, that the shock came from something she either saw or realised by her unaided senses and not from something which someone told her, and that the shock was due to a reasonable fear of immediate personal injury either to herself or to her children. It was, we must suppose, natural that a mother should be anxious for her child; the mother's shock would be a reasonable consequence of the lorry-driver's negligence. Atkin, L. J., went further. He was prepared to allow a right of action even to a passer-by on the road "who receives injury in the same way from apprehension of, or the actual sight of, injury to a third party." This opens a wide prospect indeed. A negligent motorist whose driving leads to a gruesome accident at Charing Cross might be sued by dozens of spectators on a crowded pavement. This extension of the law was not necessary to the decision in Hambrook's case, and it must not be taken as an established principle.

PREVENTION AND TREATMENT OF WHOOPING-COUGH

IN a recent communication P. Stocks,[1] discussing the epidemiological features of whooping-cough, expressed the opinion that in London it must now be regarded, in terms of mortality, morbidity, and loss of school attendance, as the most expensive epidemic disease of childhood. Since the disease is only notifiable in certain of the London boroughs its real ravages can only be surmised, but, even so, it is noteworthy that at the present time, as the weekly returns show, considerably more than 600 cases are at present under treatment in the infectious hospitals of the London County Council. Among the common acute specific infections the case-mortality of whooping-cough is rivalled only by that of measles, and for the same reason, the frequency of the secondary infection of broncho-pneumonia. In an address delivered to the Royal Statistical Society on Feb. 21st Mr. A. Bradford Hill, D.Sc., called attention to the heavier mortality of female children, and to the unexplained fact that the death-rates of illegitimate children of 3 months and under are less than those of legitimate children.

THE CAUSAL ORGANISM

What is the primary infection? Most workers accept the Bordet-Gengou bacillus (*Hæmophilus pertussis*) as causal. A. D. Gardner and P. H. Leslie[2] consider that there is "no longer any room for doubt" that it is the true and sole cause, and they give several reasons for this conclusion. Others are not so sure. A. R. Rich[3] does not think that the bacillus represents the whole story, and in this he is not alone. Rich points out that interstitial pneumonia which is characteristic of whooping-cough occurs also in measles and influenza, diseases in which there are strong reasons for suspecting the ætiological rôle of filtrable viruses, and further, that the mononuclear-cell infiltration of the bronchial walls which is to be seen in sections of interstitial pneumonia also occurs in pertussis uncomplicated by pneumonia. He thinks that the true cause of whooping-cough may be a filtrable virus, the Bordet-Gengou bacillus being a secondary invader, and supports his view by adducing distemper in dogs which pertussis "resembles in an extraordinary manner." Distemper is now held to be caused by a filtrable virus, the *B. bronchisepticus* being merely complain that vermin come from her room and that an offensive smell is noticeable. The room is crammed with furniture and bundles of newspapers and it is feared that she will cause a fire. Her mattress is obviously the cause of the smell and the room and the furniture are badly infested with bed-bugs. She is not easy to reason with but I try to make it clear that unless she allows the disinfecting staff to rid the room of vermin, and unless she allows herself to be properly nursed, I shall get a magistrate's order for her removal to a municipal hospital. I am reluctant to interfere with adult persons who deliberately choose to live in a state of filth, but here other persons are affected and she herself is likely to die from inattention. She has lived in this miserable room for 20 years and dreads the idea of leaving it. My next visit is to a delicatessen shop in a residential neighbourhood, the proprietor of which has decided to fry fish for sale, in the basement. Fish-frying cannot be forbidden in London, but is strictly regulated by by-laws, and the difficulty here is the ventilation of the frying room. It will be necessary to have pavement light and ventilation and this will spoil the appearance of his attractive shop-front. I must, however, consider what effects an unventilated room may have on the health of his staff, and I am quite obdurate on the matter. I instruct the sanitary inspector that ventilation must be enforced, by legal proceedings if necessary.

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[1] THE LANCET, Jan. 28th, p. 213, and Feb. 4th, pp. 265 and 257.

[2] Ibid., 1932, i., 9.

[3] Bull. Johns Hopkins Hosp., 1932, ii., 346.

Next I proceed to a small but expensive flat in the best quarter of my area, whose occupant, a professional man, is dissatisfied with what the sanitary inspector tells him. His complaint is that his wife finds the kitchen dark and badly ventilated. I find that he is using a gas-oven and cooker without a flue and that the kitchen quickly becomes overheated. It is impossible to construct a flue, and I therefore inform him that the ventilation will only be sufficient if he substitutes an electric cooker and fan. As for light, the situation absolutely prevents the access of natural light. From his remarks I gather that he has a tenancy agreement which is proving irksome and he wishes no doubt to enlist my support in his dispute with his landlord. He will be disappointed.

My borough is one of contrasts and after driving half a mile I find myself in a slum area. It is necessary that a sanitary inspector should devote his whole time to supervising these few acres, in a war waged against indifference and squalor. Many of the landlords are willing to do their best for their tenants, but a certain number can only be made to do their duty in removing sanitary defects by formal notice and the threat of legal proceedings. The inspector gets me to referee any cases which he proposes to take to the police-court. The commonest defect is "premises in such a state as to be a nuisance." I have to see two such cases. The rooms to which he takes me first have not been redecorated for some three years. The walls and ceilings are darkened and impregnated with smoke, dirt, and exhalations. Things are even worse than they appear to be, since on scraping away the wallpaper an older and even dirtier one is seen to lie underneath.

Next I am taken by the inspector to a basement tenement where dampness has shown itself on the walls. It can be seen and felt with the hand. There are various legal procedures for dealing with such a defect. It is for me to decide what is to be done. We may be able to make a closing order, prohibiting the use of the rooms for human habitation, or else for use as sleeping-rooms. We may serve a notice to repair, do the work ourselves if the owner defaults and recover the cost. We may regard the dampness as a nuisance. I advise the inspector that the latter procedure will be the most practicable, and we then proceed to discuss the details of the structural work which is necessary. Whilst in the basement I learn that the occupants are newcomers to the borough and have a baby. I make a note of the name and address so that the health visitor may pay a call. The inspector takes the opportunity of asking me to see a house near by, as regards water-closet accommodation. The law requires that one closet be provided for every 12 occupants of a house. This house contains 14 occupants, the majority being small children. I am not disposed to put the landlord to the expense of providing another closet under these circumstances, but I tell the inspector that the matter must be reopened in two years' time.

THE AFTERNOON

After the lunch interval I return to the town hall, intending to spend the afternoon reading and writing at my desk. There are always papers accumulating which have to be dealt with. Later on, I remember that there are two infant consultations in session this day of the week and that I have not put in an appearance lately. At each welfare centre I interview the superintendent, say a word or two to the voluntary helpers, and put my head into the doctor's room. Everything appears to be going smoothly. On returning to my office there is a message waiting for me that a doctor would like me to see a case of suspected scarlet fever. I go out at once in order to get the advantage of the daylight. The patient is a child with a punctate erythema and a slight rise of temperature, but with no other distinctive signs, such as one might expect in the throat or tongue. My advice is to keep the child isolated and under observation. Fortunately, this is possible as the child is an only one and in a comfortable home.

There is a public health committee meeting early next week and the committee clerk comes up to see me. He is the link between me and the town clerk; he keeps me in touch with all official correspondence and drafts the agenda and minutes of the committee. We discuss which of my matters are to be brought before the committee. The public health committee is the one to which I am mainly responsible. There is also a maternity and child welfare and a housing committee. The monthly meetings of the committees loom large on my horizon. Each lasts an hour or so, but into that time a good deal is compressed. A large number of reports and letters are placed before the committee and its decision taken on various matters of detail and policy. Once a month the council meets in public. It is very rarely that I am called upon to speak at a council meeting, but I have to be there to prompt my chairman if he is interrogated on any public health matter.

SOME PERSONAL MATTERS

The foregoing is only a sketch of my duties, which are extremely varied. In addition to being a medical man I have to know something about law, sanitary engineering, and other sidelines. One drawback in my position is that I do not get much clinical experience, but London is fortunately a place where there are plenty of post-graduate facilities. Men in my position have to make up for lack of clinical work by doing plenty of general medical reading. I am a whole-time officer and am therefore debarred from engaging in practice. Apart from this, no undue restriction is placed on any activities which I may wish to pursue out of office hours, such as writing or the teaching of public health. My working week extends from Monday morning to Saturday midday, but it is quite possible for me to take Saturday off from time to time. I am allowed one month's holiday a year, which, subject to arrangement with my deputy, who is a local practitioner, I can take at any time. For one week of the year I attend one of the medical congresses, for which I get special leave of absence. A London M.O.H. is bound to live within his borough or close to it, unless he obtains permission to reside elsewhere, which is not often refused. My evenings and week-ends are usually my own, the only interruptions being occasional telephone calls and requests to see cases of infectious disease. I meet my fellow practitioners at the local medical society or at B.M.A. meetings and committees.

I have left to the last the question of remuneration, and need only say that London boroughs differ somewhat in this matter. Generally speaking, we experienced practitioner realises that there is as yet no specific, and falls back, as he must, upon such symptomatic treatment as, in his experience, has procured alleviation in some at least of his cases. There are only two sheet anchors—sunshine and an abundance of fresh air—but, for only too many children, neither of these is obtainable. For others these conditions are not even sought, because whooping-cough, like measles, is considered as a disease which can be treated without medical advice, or this may be enlisted only at a stage when it can be of little avail.

IRELAND

(FROM OUR OWN CORRESPONDENT)

REFORM IN NATIONAL HEALTH INSURANCE SYSTEM

THE approved societies are concentrating their forces in opposition to the proposals for reform in the National Health Insurance Scheme which are expected to come before the *Dáil* in the near future, and the daily press has been giving expression to their views. The change to which most grave objection is taken is the amalgamation of all the existing approved societies—65 in number—into one "National Health Insurance Unified Society." It is stated that the Bill will provide for equal benefits for equal contributions for all insured persons between the ages of 16 and 70, who are not earning an income exceeding £250 a year, and all such employed must be insured. Manual workers must be insured, irrespective of income. It is pointed out that 43 of the 65 approved societies give additional benefits at present, the additional benefits being of varied nature. It is suggested that these additional benefits which the better managed societies have been able to provide will disappear in the future, and that, in fact, the stronger societies will be compelled to carry the worker on their backs. Despite the protests of the approved societies, it is unlikely that the Government will alter its intention concerning insurance. The concentration of the manifold, but, at present, scattered influences of the several approved societies into one society is not attractive to the medical profession, whose interests up to the present have received little respect from the societies.

THE DOCTOR'S DAY

"Come, tell me how you live," I cried,
"*And what it is you do!*"

XVI.—METROPOLITAN HEALTH OFFICER

THE medical officer of health of a metropolitan borough shares responsibility for the health of a large and populous area with the chief medical officer of the London County Council. The latter is responsible amongst other things for the provision of institutional medical treatment and the medical inspection and treatment of school-children. My borough is a fairly typical one, but administrative arrangements differ greatly in the London boroughs. I live about a mile from my office, which opens at 9 A.M.; it is not necessary for me to arrive before 9.30 A.M., by which time my correspondence has been opened and sorted, all letters of importance being ready for me to read. Amongst those requiring immediate attention are the "complaints," that is, information as to insanitary conditions requiring to be investigated. Some complaints are anonymous; these are not ignored, but entered with the others in a register, so that they may all be accounted for in due course. Notifications of infectious diseases are entered in a register and handed to the sanitary inspectors, unless I decide to visit personally.

I ring for the typist and dictate some letters. Others will be drafted for me by my chief clerk. By this time there is ready for me a report on the disinfections performed on the previous day. I also read over a summary of each health visitor's and sanitary inspector's previous day's work and interview any of these officers that wish to consult me. This will be for the purpose of seeking my advice or to arrange for me to visit premises. I am well isolated from telephone interruptions, but here is a doctor put through to me. He saw a woman yesterday with a sore-throat which he diagnosed as tonsillitis; before leaving the house he decided to take a throat swab; he informs me that the swab has been reported positive to diphtheria but that he said nothing to the patient about this possibility and feels in a difficulty. My obvious course is to visit the patient, advise as to diagnosis, and smooth away any difficulties. It is sometimes forgotten that to swab a sore-throat is to suspect diphtheria, and that a suspect diphtheria must be treated as such until the contrary is proved.

SOME CALLERS

It is now after 10 o'clock and there are persons waiting for interview. The first is a boarding-house keeper. It appears that rats are reported in the neighbourhood and that an inquisitive borough council workman has been creeping along the sewer. He reports that the drain from her house is an old brick one, which has collapsed, thus enabling rats to leave the sewer. She has learnt to her dismay that she is responsible for the repair of the drain, not only on her premises, but as it proceeds under the road to the sewer. The estimated cost of the repair is £50, but she has fallen on lean times and cannot find the money at once. After some discussion it is agreed that the council will do the necessary repairs and that she will repay the cost by instalments. The next caller is an irate father who complains to me about a call paid to his house by a uniformed N.S.P.C.C. inspector. He cites one of my health visitors as being responsible for this invasion of his privacy and appeals to me to protect him from further molestation. The *corpus delicti* is produced, in the person of little Henry. He is pale and flabby, and has bandy legs. His mother, under my cross-examination, admits that the child has not been to hospital about his legs for two months. I speak forcibly to the parents and approve of the health visitor's action. I think I have done Henry a good turn.

Next my old friend Councillor —— comes in. He is retired and has plenty of time to spare. He is much concerned about the welfare of his fellow men, and 20 minutes of my valuable time pass by pleasantly. I next find that a mother and her child with a running nose are waiting to see me. This child was in hospital for three months with scarlet fever. Seven days after its return another child in the family sickened with the disease. I called to see the mother yesterday but she was out, so that she is asked to call here by appointment. There is nothing apparently wrong with the child except the nasal condition. I advise the mother to keep it to itself as much as possible and to take it to the local children's hospital. She is too poor to go to a private doctor. This child is probably a carrier of scarlet fever infection and I detail a woman sanitary inspector to keep it under observation.

OUTDOOR VISITS

It is now 11 A.M. and I have several visits to pay. My first visit is to a room in a respectable working-class street. Here I meet a woman sanitary inspector and see a very old woman more or less confined to bed with some form of paralysis. The neighbours suspected to be suffering from the five major diseases, or to have come from an area declared by the Minister to be infected with any of these. He has also to carry out such disinfection as he thinks necessary and see that the cleaning is done by the master or by the sanitary authority at the master's expense. In the fourth schedule full details are given of the measures to be taken against these diseases, with the exception of yellow fever, which is subject to the International Sanitary Convention (Paris) of 1926. The regulations are issued with an explanatory circular, No. 1296.

County Statistics

The issue of the separate county volumes setting out the results of the 1931 census of England and Wales is proceeding apace. Some sixteen have now been published, two of the latest of which refer to Stafford and Bedfordshire. Both these counties, it is shown, increased between 1921 and 1931 at a slightly faster rate than the country as a whole; though Bedfordshire has gained, Stafford has lost, by migration during the ten years. The only novel feature introduced at the 1931 census provided for a specific return of the "usual residence" of each person, irrespectively of the address at which he or she was enumerated. In neither of these counties did the resident population differ materially from the enumerated. In Stafford, in 44 areas out of 51, and in Bedfordshire, in 12 areas out of 14, the difference—usually a deficiency of enumerated—was less than 10 per 1000. Both counties agree in showing a considerable fall in the average size of family, and accompanying it, a substantial reduction in both the numbers and proportions of persons scheduled as living in the "overcrowded" category (more than two persons per room), the rate of reduction, it is to be noted, showing great improvement over the increases recorded in the previous decade. On the other hand, it must be observed that, in Stafford, of families of six or more persons in size at the recent census there were as many as 2604 housed in but one or two rooms each, so that there is still scope for much improvement in this respect. The average age of the population in these counties has risen by about two years between 1921 and 1931, and in consequence, and in spite of the economic depression, there has been an increase in Stafford of the proportion of the population enjoying the married state.

These county volumes, of which there will be between 40 and 50, comprise the statistics which are of predominantly local interest—viz., populations and acreages of local government, Parliamentary, and certain judicial areas; statistics of private families and the rooms and dwellings in which they live; and distributions of the local populations according to sex, age, and marital condition. Upon completion of the series national volumes will be issued dealing with such subjects as occupations and industries, and summarising the county statistics.

Influenza

There was a further big decline in the number of deaths from influenza last week, the total being 630, compared with 1306 in the previous week. In London there was a corresponding fall from 261 to 130. In Scotland the outbreak is now almost over, for only 44 deaths were registered in the 16 principal towns. Fifteen of these were in Edinburgh.

Details of the number of deaths in particular towns will be found under the heading of Infectious Disease, and the following Table shows the death-rates from influenza (per 1000 per annum) in various groups of great towns during the week ended Feb. 11th. It will be seen that the mortality was reduced in every area except the south-west.

—	118 great towns.	South-eastern area.	Greater London.	Northern area.	Midland area.	Eastern area.	South-western area.	Wales and Monmouthshire
Jan. 7th	1·73	1·22	1·04	1·70	3·65	0·42	0·57	0·38
„ 14th	2·64	2·56	2·36	2·78	3·25	1·78	0·91	0·98
„ 21st	4·04	3·73	3·63	4·81	4·32	1·36	1·81	1·58
„ 28th	4·91	4·06	4·08	5.66	5·08	5·98	2·60	7·15
Feb. 4th	4·85	4·39	4·12	5·27	4·00	8·71	4·76	7·53
„ 11th	3·32	2·97	2·82	3·43	2·64	6·19	4·98	6·40

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED FEB. 11TH, 1933

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 25 (last week 18); scarlet fever, 1696; diphtheria, 844; enteric fever, 12; acute pneumonia (primary or influenzal), 4106 (last three weeks 3781, 4821, 5151); puerperal fever, 41; puerperal pyrexia, 125; cerebro-spinal fever, 84 (last three weeks 61, 66, 90); acute poliomyelitis, 10; encephalitis lethargica, 17; dysentery, 16; ophthalmia neonatorum, 82. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Feb. 14th–15th was as follows:—Small-pox, 60 under treatment, 6 under observation (last week 56 and 4 respectively); scarlet fever, 1583; diphtheria, 1572; enteric fever, 8; measles, 291; whooping-cough, 669; puerperal fever, 28 (plus 11 babies); encephalitis lethargica, 231; poliomyelitis, 1; "other diseases," 323. At St. Margaret's Hospital there were 13 babies (plus 9 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 28 (1) from measles, 10 (5) from scarlet fever, 70 (20) from whooping-cough, 38 (7) from diphtheria, 44 (8) from diarrhœa and enteritis under two years, and 1306 (261) from influenza. The figures in parentheses are those for London itself.

The towns which reported the largest number of deaths from influenza were as follows, last week's figures being given in parentheses: Bradford 43 (38), Manchester 41 (87), Hull 40 (49), Liverpool 33 (49), Swansea 30 (25), Sheffield 28 (63), Bristol 27 (62), Birmingham 24 (21), Stoke-on-Trent 24 (34), Norwich 21 (26), Blackburn 20 (16), Bolton 20 (21).

Hull reported 1 death from enteric fever. Five fatal cases of measles were reported from Liverpool, 4 from Birmingham, 3 from Burnley. Deaths from whooping-cough were still widely distributed, 6 being reported from Leeds, 5 from St. Helens, 4 from Wolverhampton, each 3 from Leicester and Liverpool. Diphtheria claimed 6 victims at Liverpool, 4 at Hull.

The number of stillbirths notified during the week was 314 (corresponding to a rate of 47 per 1000 total births), including 38 in London.

WEST HARTLEPOOL INFECTIOUS DISEASES HOSPITAL. Alderman Clarkson, chairman of the health committee, last week opened an infectious diseases hospital at West Hartlepool which has cost £40,000. The scarlet fever block provides accommodation for 22, and the diphtheria block for 16 patients, and provision has been made for 16 sisters and nurses.

receive enough to live in reasonable comfort and have other compensations. Our pay is steady, we have few professional outgoings, and we lose nothing by taking a holiday. When we are ill we receive full pay, perhaps for as long as a year, and after ten years' service we receive a pension if disabled. At the retiring age, which is usually 65, the pension amounts perhaps to half or two-thirds of one's previous salary. In my somewhat detached position I often receive confidences, and whilst I may feel a twinge of envy on hearing of the earnings of the big men of the profession, I know that many men, no worse than myself, have a hard struggle to carry on. I am therefore content to pursue my interesting work for a modest reward, but I could not be happy unless I was an enthusiast for preventive medicine.

PUBLIC HEALTH SERVICES

Economy at Wigan

AT a meeting of the Wigan Education Authority on Jan. 25th reference was made to a special report submitted by Dr. H. Whitehead, medical officer of health, to a joint meeting of the committees charged with child welfare at home and at school, which asked for certain increases of staff and facilities. One of the aldermen remarked that while no doubt it was the duty of the medical officer to submit suggestions to lead to an ideal medical system, some at any rate of the members of that authority were there to think of the people who had to find the money. He mentioned the good average attendance at schools in the town, and thought they could deduce therefrom that the medical services must be sufficient and the authority ought to be extremely reluctant to make the ratepayers spend more money on reorganisation. "I may be a voice bleating in the wilderness," the *Wigan Observer* reports him as saying.

It is indeed true that the percentage attendances at the Wigan schools, for which the alderman paid a generous tribute to the school medical service and attendance officers, has been good for some years past, but this is not a criterion of the adequacy of medical organisation. Children may attend school regularly and yet have defects of serious import for their future health and efficiency. A more valid sign of the need for extension of medical care at Wigan is an infantile mortality-rate of 109 for the period 1921–30, compared with 72 for the whole country. Another that the routine medical inspections are never completed in the year, and even to get through the numbers actually done the work has to be rushed. There are few areas in England where the position is as bad, and no one who has kept a watch on this column from year to year has been in doubt that in health matters Wigan has much leeway to make up. For instance :—

> "Dr. W. Whitehead and his assistants are fighting an uphill battle. Though the report describes good progress made with orthopædic and dental schemes, yet the facts and figures show a great deal more to be done in many directions. . . . The dental staff is much too small, there is one dentist for 13,327 children, while the Board of Education recommended one for each 5000. Dr. Whitehead's statement that there is ample scope for two full-time dental surgeons is on the modest side " (THE LANCET, 1931, i., 1427).

It is for one additional dentist, two altogether, that Dr. Whitehead is now asking. These are only examples to show that what is now sought is not an "ideal" organisation, but one which makes a reasonable approach to the average of progressive areas.

The matter however goes far beyond the local needs of Wigan. If there is there one voice bleating in the wilderness, elsewhere there is a full-throated chorus calling out for reduction of "non-productive" expenditure, and the school medical service is talked of as a luxury and as an "unimportant frill" of education. But surely any practical person would say that the results obtained by coöperation of teachers with school medical service in producing children who are clean, alert, and healthy in mind and body are more important than mere academic attainment. From a financial aspect is it not a sound proposition to lessen the number of those who will be burdens on the community ? An untreated untrained deaf person is rarely self-supporting, and many cripples have to be helped by the ratepayers for the period of life. All these sources of financial loss to the community, with many others, such as rheumatism, causing loss of working time greater than that of industrial disputes, can be minimised by an efficient school medical service at a cost which is relatively trifling. But the work is of little use unless it can be done properly; rushed inspections are almost valueless. Children can be inspected and records made at a rate of 25 or more a session ; but such examination will fail to notice those early signs of disease in the stage when it is most easily cured. Gross defects usually cause the parents to seek advice of their own medical attendant, or at hospital; the less obvious signs, whose detection may mean so much need skilled and careful investigation. No shrewd business man would think it true economy to send out damaged goods; when things are going badly the maintenance of sound quality in the output is a primary consideration for the recovery of prosperity.

Port Sanitation

The new port sanitary regulations which come into operation on May 1st amend and consolidate the measures now in force for preventing sea-borne infection. The master of a ship arriving from abroad is required to ascertain the health of all persons on board and to complete a "declaration of health," countersigned by the ship's surgeon (if any), stating that there have or have not been on board cases suspected to be infectious. For the master who has no surgeon to help him half a dozen clinical signs of serious infectious diseases are mentioned. The master is advised in his own interest to send a wireless report in advance. The declaration of health comes into the hands of an officer of customs who, on finding no infectious disease on board and no epidemic among the rat population, gives free pratique, or, if he suspects either, detains the ship for 12 hours to give time for inspection by a medical officer of the port sanitary authority. Precautions are to be taken not only against cholera, plague, and yellow fever, but against typhus, small-pox, and all epidemic or acute infectious diseases, not including venereal disease. Standing permission may be given to the master of a daily passage boat to disembark passengers on arrival, provided he undertakes to report any suspicion of infectious disease to the medical officer by wireless. Apart from this no unauthorised person may board or leave a ship arriving from a foreign port till the ship is freed from control. Only in special circumstances do tuberculosis and the commoner infectious diseases call for the isolation of the ship. Control is now so complete and confident that mooring stations for detained ships are to be established in the docks. Powers are given to the medical officer to prevent the embarkation of persons removal) of local sources of infection, of unsuspected ocular defects, and of a few other remediable but unobtrusive troubles; occasionally, if the examination were very complete, some actual systemic disease might be discovered in its early stages and checked, but I think not very often. No doubt a proportion of those examined would be relieved of fears which they would not have had the courage to carry to their doctor, and it is to be hoped a fair amount of good advice on personal hygiene would be spread abroad.

But on the debit side would have to be placed the unfortunate and unprofitable discovery of cardiac murmurs, tachycardias and innocent arrhythmias, impaired percussion notes at the right apex, movable kidneys, unconventional blood pressures, pallors simulating anæmia, retroversions of the uterus, tendernesses in the right iliac fossa—all the familiar props of invalidism, all inviting misinterpretation, all capable, if probed too long or too often or mentioned a thought too earnestly, of spoiling a useful life. If the account were cast in terms of human health and happiness is it not doubtful on which side the balance would be found?

But this, Mr. Donaldson might say, is going far beyond what he advocates. He only suggests that women who have reached an age when cancer may begin should be encouraged to visit their doctors regularly to be overhauled.

The difficulties still seem to me great. How often is the examination to be made? How far is it to be carried? What does the doctor undertake to do for the patient? An ad-hoc examination, directed only to the likeliest cancer sites, guarantees nothing and must, I should suppose, be for any patient of ordinary courage cumulatively alarming, and for a timid or introspective one completely demoralising. True, at the last examination the doctor saw nothing abnormal through the vaginal speculum or the proctoscope, but he is to look again in six months or three. How long can this fortunate immunity last? What will he see next time? What kind of reassurance is that which lasts at most six months? On the other hand an examination professing to be a general overhaul must cover a wide and undefinable field. To be worth anything it must be carried at least to life insurance limits, and yet as the patient approaches the age at which the irreversible and final degenerations begin to show themselves the humane examiner will find it harder and harder to decide how far to go, what to reveal, what to reserve, and what advice to give; nor will he easily banish from his own mind the fear of a day on which at some six-monthly examination of a faithful patient he will discover not an early but an inoperable growth.

Let it be conceded at once that we should examine, thoroughly and sympathetically, any patient whom we know or guess to be afraid of cancer. From my own experience I should have supposed we all do so, time and again; carcinophobia is a very widespread disorder, commonest perhaps in healthy young men, and surely it must be uncommon for a patient to be laughed at by his or her own family doctor for an honest if fantastic fear. But periodic examination should, I submit, be confined to the young, should on no account be promoted by propaganda, and should not be directed to a single issue.

The case of London school-children is perhaps worth considering. They are submitted to periodic general examinations in school, which are accepted as a matter of routine, and by general consent do good. But many of them have lately been submitted to repeated examination, accompanied by vigorous propaganda and directed solely to the detection of early rheumatism or even "pre-rheumatism." The arguments used are almost precisely those used concerning cancer, though perhaps they are more insecurely founded. Little stress is laid on the difficulties of diagnosis, none on the dangers of diagnosing rheumatism where none exists, and it is implied that there is some efficacious treatment which would "save the heart" if only it could be applied early.

No one will ever be able to balance the accounts of this campaign, for all its effects can never be known; but those of us who work in schools and in children's hospitals see enough to be sure that there are very big items on the debit side.

I am, Sir, yours faithfully,

Hampstead, Feb. 15th, 1933. LINDSEY W. BATTEN.

MALIGNANCY IN RADIO-ACTIVE PERSONS

To the Editor of THE LANCET

SIR,—In a recent leading article (Dec. 31st, 1932, p. 1439) you say that in 1926 Dr. Martland was the first to publish observations on this important occupational affection. For the sake of historical accuracy, I desire to call your attention to the fact that at the annual meeting of the industrial medicine and public health section of the American Medical Association held in Atlantic City in May, 1925, I presented unmistakable evidence of this fact on the basis of my own investigation which, as far as I know, was the first made public on that question.

My investigation was an original study of the facts of the disease as it appeared in a number of girls employed in the radium plant in Orange, near Newark, New Jersey. The reprint of my paper contained all the essential facts, establishing the occupational origin of this disease to which I gave the name radium (mesothorium) necrosis. But it requires to be said, as pointed out in my address, that as early as September, 1924, Dr. Theodore Blum, a dentist in New York City, in an address before the American Dental Association referred to it in an obscure footnote reading as follows:—

> "During January, 1924, there came under my observation a case of osteomyelitis of the mandible and maxilla, somewhat similar to phosphorus necrosis, which, however, was caused by some radio-active substance used in the manufacture of luminous dials for watches. The condition has been termed 'radium jaw.'"

This note, however, attracted no attention, and has not, as far as I know, been referred to by anyone writing on the subject.

I concluded my paper with the remark:

> "In any event, however, we are dealing with an entirely new occupational affection demanding the utmost attention on the part of those who are in a position to render the necessary technical assistance, but at the same time it is a safe assumption that if the insanitary habit of wetting the brush with the lips is done away with the disease itself will probably tend to disappear, or in any event become extremely rare."

This conclusion has been fulfilled since there have been no entirely new cases in the meantime, although old cases have increased as the facts have come to public notice. I recently had a call from the first case seen by me, a young woman about 32 years of age, who is now in reasonably good health and free from all pain, suffering only from a shortened limb after the disease had settled in the pelvis.

Dr. Martland has done outstanding service in giving technical attention to the true nature of this affection, and his papers on the subject are classics in medical

CORRESPONDENCE

CONTROL OF INFECTIONS IN CHILDREN'S WARDS

To the Editor of THE LANCET

SIR,—The leading article in your last issue should remind those on whom rests the responsibility of sending or receiving children into institutions how serious the risks and consequences of infections may be in such places. There can be no doubt that we are groping towards a partial solution of the problem through the coöperation of medical staffs, administrators, and architects in the planning and building of newer hospitals with smaller ward units. But mere structural arrangement, vitally important though it be, deals with only one aspect of it. In hospitals it may be necessary to do away with large wards and to restrict the number of cots in each room to two, as is suggested in your description of Wieland's new children's hospital in Basle, but this will not be found practicable for all institutions even if it were desirable.

It is of first importance to appreciate which particular infections are most dangerous and what age and type of child most likely to be affected. Most of us with experience of the hospital treatment of children will readily agree with your view that it is the introduction of non-specific infections such as the virus of the common cold or of "influenza," and the mixed flora of broncho-pneumonia, amongst children already ill, that is to be feared more than infection with so-called specific fevers such as measles, diphtheria, and scarlet fever, outbreaks of which are relatively easy to avoid or control. But this view needs reinforcing by recognition of the fact that it is mainly towards the infants that the danger is directed, and that a respiratory or tonsillar infection may be harmless in a 5-year-old child and "of serious clinical consequence" when transmitted to an adjacent infant.

The immediate social importance of this state of affairs is that there is now astir an increasing interest in diseases of infancy, and that this will probably lead to the opening of new hospitals and infants' wards by municipal authorities and other public bodies. This is a matter which should not be contemplated lightly. If this be doubted the recent words of one of the most eminent of the world's pædiatricians should be read: "The herding of infants in separate wards where the individualisation and mothering of the home are wanting, where exposure to infections of the respiratory tract leads to more institutional casualties than one can contemplate with serenity of mind and of heart, is fraught with such danger that one often wonders if it were not better to abolish them altogether . . ."[1] If this be the opinion of one whose hospital appears to the visitor to leave nothing to be desired, well may others search their hearts and question themselves concerning ward infections in hospitals to which they themselves send or receive children for treatment. This danger to infants is well illustrated by the results of the treatment for pyloric stenosis, for which the stay in hospital is usually limited to as short a period as possible. In private practice a mortality of 10 per cent. is expected. In hospitals a mortality of 30 per cent. is frequently exceeded. The risks in other diseases requiring a more prolonged stay can be suspected.

While it is my object to emphasise the danger of ward infections particularly in young infants, I am no advocate of the defeatist policy of closing the infants' wards. My hospital experience—formerly bitter, now less so—convinces me that with thought and care on the part of the staff and nurses, and with proper structural and administrative arrangements, these dangers can be avoided and hospital treatment rendered as safe for the infant as for patients of other ages. Moreover, the study in hospital and the ultimate mastery and avoidance of these infections will throw light on the various disorders so rife amongst the children of the ill-housed classes.

It is difficult to cite brief rules by the application of which ward infections can be avoided. Small ward units with adequate milk kitchen arrangements; facilities for nursing mothers to be admitted with their babies; the segregation of infants into groups of approximately the same ages; the realisation that a sudden loss of weight due to "gastro-enteritis" or "acute intoxication" appearing while the child sojourns in hospital is probably due to a ward infection; the limitation of a nurse's services to one or two babies; the use of lay help if necessary; the recognition of the danger of tonsillitis or septic sores in a nurse; the safeguarding of the nurses' health by adequate holidays and recreation; the recognition of the danger of a discharging empyema infecting another child; the necessity for spare wards so that a ward may be completely emptied once a month for cleansing—these are some of the important points which rise to the mind. But when all this is done, when all techinical details have been ordered and obeyed, success will still wait upon the enthusiasm of the nursing staff, and the interest of a medical staff capable of recognising how little of disease in infancy is due to "feeding disorders," and how much to infection. I am, Sir, yours faithfully,

Newcastle-upon-Tyne, Feb. 19th, 1933. J. C. SPENCE.

EARLY DIAGNOSIS OF MALIGNANT DISEASE

To the Editor of THE LANCET

SIR,—Your annotation and Mr. Donaldson's letter raise the question of the expediency of periodic medical examinations which Mr. Donaldson advocates so warmly and so persuasively. May I be allowed to comment as one generally interested?

The most sceptical of pessimists will scarcely have the hardihood to urge that we should not try to discover malignant and other more tractable diseases in their early stages if we can, and our chances of doing so would no doubt be increased by examining our patients frequently and regularly without waiting for symptoms. A good theoretical case can be made out for the periodic examination of everyone from birth to the onset of old age, and a generation which regarded the human body with the reverence we reserve for our machines would probably arrange for it to be done. Our own generation, however, seems to have more fear of disease than love of health; we ourselves are not free from the belief that it is our sole function to search out abnormalities, to declare them and to correct them if we can, and we are still far from the day when the reproach of having imagined a pathological condition will be esteemed as great or greater than the reproach of having overlooked one. In consequence periodic examination, if it were now instituted, might prove to be a mixed or doubtful blessing.

To the credit of its account could be placed the gradual extension and diffusion of knowledge and understanding of the normal, the discovery (leading to extension or breaking down of the atelectatic area. To await a clear picture of cavity is to risk adherence of the lung to the thoracic wall. The second radiogram on which the decision as to collapse must be made is not to be delayed longer than ten days, because breaking down of the area may occur with terrifying rapidity.

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[1] Brennemann, J.: Amer. Jour. Dis. Child., 1930, xl., 1.

2. The interesting case described by Dr. Hudson well illustrates the teaching of Turban[1] that natural healing of a cavity, if it is to occur at all, takes place quickly. Conservative treatment is only justified if successive radiograms taken at very short intervals show diminution.

3. The prognosis of the patient with cavitation of the lung is bad; Lydtin[2] traced 771 such patients and found that there was a mortality of 98 per cent. within a few years. Modern methods have rendered the accurate diagnosis of a cavity possible, but an accurate prognosis is a contradiction in terms. It would therefore seem unwise to assure any given patient suffering from this condition that he will survive 10, 20, or 30 years—free to distribute, if only intermittently, tubercle bacilli to his immediate circle.

4. The performance of a partial thoracoplasty to produce collapse of the lower lobe of the lung in phthisis is an operation for which there is no justification, and in no informed European centre is it even contemplated. It is therefore a little surprising to find the recent work of Charrier and Loubat described as giving a balanced view of the modern surgical treatment of pulmonary tuberculosis because in their comparatively small experience these authors appear to have carried out the operation with some frequency.

I am, Sir, yours faithfully,

LAURENCE O'SHAUGHNESSY.

Royal College of Surgeons of England, Lincoln's
Inn-fields, W.C., Feb. 19th, 1933.

LYMPHO-GRANULOMA INGUINALE

To the Editor of THE LANCET

SIR,—Will you permit me to make clearer a statement in the paper in your last issue by my friend Dr. Stannus? As it stands it might be taken to mean that among 10,000 examinations at the Albert Dock Hospital venereal diseases clinic only two doubtful cases of lympho-granuloma inguinale had been recognised. In fact, since 1920 and up to date, 93 cases of climatic bubo (Scheube), occurring in men of European, Asiatic, and African race, have been recognised in the clinic.

The condition, therefore, has been known and looked for at the hospital. The two doubtful cases have been—one, a young white seaman who had not been away from the coasts of Britain, where the clinical doubt was whether it was climatic bubo; and another, a white seaman, where, although the diagnosis was confirmed by positive skin reaction (Mr. A. H. Walters) and by reproduction of bubo in the guinea-pig by Dr. Marshall Findlay, there could be no reliance on the patient's varying statements as to when and where he had acquired the infection. All the other 92 cases were seafarers, and had acquired their infection in the tropics or sub-tropics. For comparison it is interesting to note that of the many landsmen from the district who have attended the hospital V.D. clinic, none has yet been seen with climatic bubo.

I am, Sir, yours faithfully,

H. M. HANSCHELL,

Hon. Medic[illegible] dical Officer, i/c
V.D. [illegible] Royal
Feb. 20th, 1933.

NON-TROPICAL SPRUE

To the Editor of THE LANCET

SIR,—Unfortunately, my attention has not been called till now to a review of my book "Non-tropical Sprue" which appeared in THE LANCET of Dec. 3rd, 1932, p. 1221. It appears to me that the reviewer has misunderstood my comments and views on some very essential points, and this has occasioned an unjustified criticism of my work. I may add that, as far as I know, no other reviewer of my book has misunderstood me in this manner, so that the fault can hardly altogether lie in my presentation of the subject.

Evidently the reviewer does not realise exactly what is meant by the terms "non-tropical sprue" and "idiopathic steatorrhœa," and he fails to grasp the main purpose of my book. Non-tropical sprue is a sprue-like disease occurring in adult persons who have never been in the tropics. Idiopathic steatorrhœa comprises cœliac disease in children, tropical sprue and non-tropical sprue as near-related, probably identical, diseases. The term "idiopathic steatorrhœa" was introduced in the literature by me in a paper published in THE LANCET (1929, i., 1086) under the title "The Cœliac Affection—Idiopathic Steatorrhœas." The purpose of my monograph is given on the first page in the following words: "The purpose of this work is then to describe the clinical picture of non-tropical sprue, to demonstrate that non-tropical sprue is identical with sprue occurring in the tropics. . . ."

The reviewer says: "Dr. Thaysen has for many years been interested in idiopathic steatorrhœa or, as he prefers to call it, non-tropical sprue." This is not correct, as the terms idiopathic steatorrhœa and non-tropical sprue are not synonymous. Nor is the reviewer correct in saying: "His (Thaysen's) main thesis, as was apparent in his earlier papers, is that non-tropical sprue is identical with tropical sprue and probably with Gee-Herter's or cœliac disease." As cited above, the purpose of my book is to demonstrate that non-tropical sprue is identical with the sprue occurring in the tropics, so that when the reviewer states that "unfortunately his analysis of cœliac disease in children is far from complete," his remark is entirely off the track, as I have not aimed at giving any complete analysis of cœliac disease in children. I have included only those clinical features that might elucidate certain points in the symptomatology of non-tropical sprue.

The reviewer further writes: "He fails to appreciate the striking fact that the majority of adult patients with idiopathic steatorrhœa have a history of diarrhœa and bone deformity during infancy." In saying this the reviewer demonstrates that he does not know the meaning which the term "non-tropical sprue" holds for others and for me. The cases he refers to are described by Parsons and others under the name "cœliac rickets," and they are cases of cœliac disease in children with production of rachitic bone deformity; some cases of such patients live to become adults. Non-tropical sprue, on the contrary, develops in adult persons, and consequently these patients will not present rachitic bone deformities but osteoporosis and a slight degree of osteomalacia. This capital difference seems to have gone quite unnoticed by the reviewer; yet he might have found it peculiar that among the authors describing cases of non-tropical sprue none has demonstrated rachitic bone deformity in this disease.

The reviewer says: "On the other hand, the difference between these two conditions (cœliac literature. By a fortunate coincidence his services were available to the girls since he is city physician in Newark, New Jersey.

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[1] Turban, K.: Zeits. f. Tub., 1924, xli., 357.
[2] Lydtin, K.: Beitr. z. Klin. d. Tub., 1925, lxi., 308.

I am, Sir, yours faithfully,
FREDERICK L. HOFFMAN.

Wellesley Hills, Massachusetts, Feb. 2nd, 1933.

MIGRAINE AND PREMENSTRUAL HEADACHES

To the Editor of THE LANCET

SIR,—The difference between Dr. A. P. Thomson and Drs. Macdonald Critchley and Ferguson is of general as well as special interest. It seems a pity that we should spend time in discussing, even nominally, what may be "the" cause of "a" disease. It should be clear by now that "diseases" are what Bentham called "fictitious entities"! And whether the kind of premenstrual headache described by Dr. Thomson is a "migraine variant" or not, is a question best answered according to the "taste and fancy" of those concerned with it. It has no objectivity. A fortiori, when we speak of "the" cause of any fictitious entity we mean, as Mercier said, that factor which most interests us for the purpose. In seeking such "causes" we are really seeking defining-correlatives (for nosological purposes) which may be of singularly little clinical importance, unless making an academic diagnosis of the label-sticking variety be considered important. But, when dealing, in the world of clinical realities, with, say, the complaints of Mrs. Smith about her premenstrual headaches, we have to do, not with defining-correlatives, but with such departures from the fictive normal, present to Mrs. Smith, as experience shows us are germane to the matter. Amongst these a bridged sella turcica is very likely to be prominent. But its relevance is not in the least impugned by the fact that Mr. Smith, who also has a bridged sella turcica, neither menstruates nor has headaches. For, as the theory of organ-inferiorities helps us to understand is the case, a bridged sella, like many another abnormality, may assume importance, or have importance thrust upon it, in times of psychological stress, which it would not otherwise achieve.

Dr. Thomson's original paper[1] does suggest to me that his patients are the subject of what is compendiously called the "masculine protest." Indeed, the woman who is satisfied with her position, *qua* muliebrity, does *not* suffer premenstrual headache; Dr. Margaret Jackson's patient,[2] I am sure, is not one of these. *In the dissatisfied women the pituitary* seems to play, premenstrually, the kind of special rôle that the error of refraction or of muscle balance does in "ocular" migraine, and that conditions of Oddi's sphincter and Vater's ampulla do in the more "bilious" variety.

There is, therefore, much to be said from the psychological point of view in relevance to the whole problem of migraine. Unfortunately, although Drs. Macdonald Critchley and Ferguson do hint that psychical stresses are sometimes obvious, and do use—*not quite correctly—the "rage and humiliation"* cliché for which I must take responsibility, they do not set out the psychological "case," and give no reference other than to Dr. Hilda Weber's capital paper, in which no complete presentation was, I fancy, intended. But, as Dr. Weber does, in some sense, base her remarks on a reference to my views, I will be glad if I may very briefly restate these.

In "Migraine and other Common Neuroses" (1926) I wrote that the man or woman who complains of migraine or of trigeminal neuralgia is, I think, without exception, placed in some situation which gives rise to an unexpressed or unrecognised emotion of, to use Adler's words, rage and humiliation. And again, that if the present psychological state of anyone who seeks relief from migraine be investigated, it will be found that, *although the patient himself will at first deny the fact,* yet always the mental content, in the neighbourhood of the paroxysms, or *during their* persistence, is one that, in Adler's phrase, is coloured by repressed "rage and humiliation" (pp. 48, 78). These statements imply no *theory;* they are based upon many observations and are open to corroboration or refutation. Those who know how to examine, usually agree with me; those who don't often do not. (A little while ago a medical man strenuously disputed with me, for an hour, that *his* inveterate migraine had any such psychological significance. The next day a friend told me, incidentally, that the doctor in question had "always a grievance and never a bob.")

But, although insistent on the *necessity* of the psychological factor, I have always stressed the importance of a complete assessment of the *whole individual* (pp. 64–66) and that it is vital in treatment that the organ-inferiority be remedied or compensated, so far as in our power. If I say that, however meticulous the general treatment, even though relief from paroxysms be obtained, the patient does not become *well* unless the psychological situation is elucidated or *adjusted (p. 77), I am as far from disparaging* general treatment as I am from disparaging psychotherapy in saying (what I believe to be true) that that *alone* does not give the best results.

In a word, the plea overlooked by Drs. Macdonald Critchley and Ferguson (as, inferentially by Dr. Thomson) is one (not found, I think, in Dr. Weber's paper) for examination, diagnosis, and treatment of the *individual as an individual, a whole, a psycho-somatic unity.* Believing that men and women are best dealt with, clinically as well as socially, *as* psycho-somatic unities and not as mind-body-dualities, I find no difficulty in tracing, in every case, in some degree, not only what is called a psychical, but a somatic element, whether or not the latter be organic and morphological or functional and neuro-humoral. Surely it is time we turned away from the dregs of theologico-scholastic Aristotelianism lurking in our muddy talk about clinical entities and specific causes! D. H. Lawrence has put the matter once and for all in his "Last Poems."

> "When I went to the scientific doctor
> I realized what a lust there was in him to wreak his,
> so-called science on me
> and reduce me to the level of a thing.
> So I said: Good-morning! and left him."

The key to understanding migraine and premenstrual headaches and their "variants" lies, not in neurology and in biochemistry—though these play their parts—but in remembering that the sufferers are men and women in this world.

I am, Sir, yours faithfully,
F. G. CROOKSHANK.

Wimpole-street, W., Feb. 11th, 1933.

SURGICAL TREATMENT OF PULMONARY TUBERCLE

To the Editor of THE LANCET

SIR,—Your last issue, with its several references to the active treatment of pulmonary tuberculosis, prompts me to the following comments.

1. The "Fruh-infiltrat" has a *bad* prognosis. The indication for collapse by air is not cavitation but

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[1] THE LANCET, 1932, ii., 229.
[2] Ibid., 1932, ii., 595.

OBITUARY

SIR GEORGE BEATSON, K.C.B., K.B.E., M.D. Edin.

CONSULTING SURGEON, GLASGOW WESTERN INFIRMARY

We regret to announce the death of Sir George Beatson, which occurred on Thursday, Feb. 16th, at his house in Glasgow in his 85th year.

George Thomas Beatson was the son of Surgeon-General Beatson, an honorary physician to Queen Victoria, who held distinguished appointments in India and saw service in the Crimean war. The son was born in Trincomalee and received his preliminary education at King William's School, Isle of Man, whence he proceeded to Clare College, Cambridge, in 1870. He graduated in arts at Cambridge and went on to Edinburgh for his medical training, taking the M.B., C.M. in 1874, and the M.D. three years later. His professional progress was rapid. House surgeon to Lord Lister, then professor of clinical surgery at Edinburgh, he moved to Glasgow and promptly acquired a professional reputation which led to his appointment as assistant to the Regius professor of surgery. At this time he became attached to the staff of the Western Infirmary, where after long service as assistant surgeon he became full surgeon in 1900. This post he occupied for 13 years, and on his retirement was elected honorary consulting surgeon.

SIR GEORGE BEATSON

[Photograph by Lafayette

During his active work in the wards of the Western Infirmary Beatson became deeply interested in the pathology of cancer as well as a successful exponent of the methods of surgical relief. He grew convinced that the rôle of fat in the ætiology and progress of malignant disease had not received proper attention. Both at operations and at autopsies he believed that he could observe a pigmented condition of the fat in cases of carcinoma. He continued his researches at the Glasgow Cancer Hospital, where he was surgeon, and in a paper in THE LANCET of 1911 he set out his theory, supported by the results of a collaborator. He admitted in that communication that to connect the fat of the body with the causation of cancer was far fetched, but submitted that there was chemical justification for the theory. Since that time much work has been done on the connexion between fatty acids and cancer, but Beatson's special treatment based upon his own theory received no general endorsement.

As quite a young man Sir George Beatson was interested in military affairs. He was an officer in the old Volunteers, and had an administrative medical post with the Territorial Army, during the formation of which he was constantly consulted, and was finally appointed administrator of the Lowland Division. At the same time he began to take an active part in Red Cross organisation, and at the outbreak of the South African war was largely responsible for the fact that the Scottish National Red Cross Hospital of 520 beds played so prominent a part. For these services he was gazetted C.B. in 1902, and five years later K.C.B., receiving also the V.D. and the decoration of the Order of St. John of Jerusalem. In the European war he played a similarly important rôle. He acted as chairman of the Scottish Branch of the Red Cross Society throughout the struggle, did invaluable work in that capacity, and received official thanks, the order of K.B.E. and the decoration of the Legion of Honour, and the Crown of Belgium. It will be remembered that the Scottish Red Cross Society was responsible for the construction of the famous bungalow hospital at Bellahouston, where 1200 beds ministered during the war to the needs of 15,000 sick and wounded, while its construction cost only £100,000.

By the death of Sir George Beatson we have lost a great medical organiser and one whose work had a special influence during critical situations in national affairs.

THEOPHILUS BULKELEY HYSLOP, M.D., M.R.C.P., F.R.S. Edin.

LATE PHYSICIAN-SUPERINTENDENT, THE BETHLEM ROYAL HOSPITAL

The death occurred on Sunday, Feb. 12th, of Dr. T. B. Hyslop, the well-known psychiatrist, in a nursing home after a prolonged illness at the age of 69. He received his medical education at the University of Edinburgh where he graduated M.B., C.M. in 1886, and proceeded to the M.D. in 1890, being already an M.R.C.P. Edin. He early elected to specialise in medical psychology; he studied his subject on the continent, especially in Paris, and at the age of 25 became assistant medical officer at the Bethlem Hospital. He was Gaskell scholar of the Royal Medico-Psychological Association, and took a prominent part in educational questions connected with psychology, and was for a time senior examiner of the Association. In 1909 Hyslop was appointed physician-superintendent to Bethlem, while he was also at different times lecturer on psychological medicine at St. Mary's Hospital medical school and at the London School of Medicine for Women. As a lecturer he was a great success, for his well-informed teaching abounded with witty illustrations of the various phases of his subject, while his great versatility made it easy for him to vary his academic discourses with references to sport and art.

DR. T. B. HYSLOP

[Photograph by Russell

Hyslop wrote a text-book on mental physiology disease and non-tropical sprue) and tropical sprue appears more significant than he suggests." As it is the main purpose of the monograph, however, to demonstrate that non-tropical sprue is identical with tropical sprue, it seems to me the reviewer might reasonably have emphasised his criticism on this particular point by informing me of the differences between these diseases, but he does not—evidently because he has misconstrued the aim of my book. In this connexion I may mention that in his review of my monograph the well-known sprue investigator, Harold H. Scott, says: "Certain small points of distinction exist between cases of tropical and non-tropical sprue, but whether those are sufficiently marked to warrant separation into two entities is doubtful." (*Tropical Diseases Bulletin*, 1933, xxx., 59.)

It seems to me that the possibility that sprue might be due to a disturbance of absorption is discussed clearly enough in the chapter "pathogenesis"; the significance of vitamin D is also mentioned there. Certainly the reviewer must have failed to notice that I recommend (on page 213) the employment of vitamin D in the treatment of non-tropical sprue.

I am, Sir, yours faithfully,

TH. E. HESS THAYSEN.

Amagerbrogade 31, Copenhagen S., Feb. 15th, 1933.

*** The nomenclature of the conditions discussed by Dr. Thaysen in his book which bears the title Non-tropical Sprue: a Study in Idiopathic Steatorrhœa, is not yet common ground. Dr. Thaysen states in his introduction: "In a paper published in THE LANCET (1929), I have tried to show that tropical sprue, '*non-tropical sprue*' *and* Gee-Herter's *disease* (cœliac disease, intestinal infantilism)—grouped together under the term idiopathic steatorrhœa—are very nearly related, probably identical conditions. Subsequently, my work with these symptom complexes has convinced me, not only that these three diseases are nearly related, but that it is the same disease which occurs in the tropics as sprue, and outside the tropics as '*non-tropical sprue*' *in adults and* as Gee-Herter's disease (cœliac disease) in children." A series of cases recently described in this country (Bennett, Hunter, and Vaughan, *Quart. Jour. Med.*, 1932, n.s., i., 603) under the name of "idiopathic steatorrhœa" suggests that most adult patients with idiopathic steatorrhœa have a history dating back into childhood. Two of these cases are included by Dr. Thaysen in his list of cases of *non-tropical sprue occurring* in the literature. The only reference on p. 213 to vitamin D therapy is where, having made the comment on another form of treatment that "it has to be kept up for a long time and of course the bowels have to be watched carefully" Dr. Thaysen adds "the same applies to the ergosterol treatment; irradiated ergosterol is given in doses up to 30–40,000 units a day."—ED. L.

BRITISH EMPIRE CANCER CAMPAIGN

RECEPTION AT DOWNING-STREET

THE Prime Minister and Miss Ishbel MacDonald held a reception at Downing-street on Tuesday evening last, when the guests were invited to see the ingenious film prepared by Dr. R. G. Canti in demonstration of the value of cinematography as applied to the study of tissue culture and cancer research. The cost of the film, whose educational lessons have been explained in the medical press on more than one occasion, was defrayed by the British Empire Cancer Campaign. It displays through microphotography the phenomena attending the cultivation of the living cells of normal and malignant disease, and the action of radium upon them. Through the exhibition the ever-changing condition of living cells could be observed by means of a series of pictures taken at frequent and close intervals over a long period, and subsequently speeded up. The value of such a record depends much on the fact that it can be referred to whenever desired to illustrate and illuminate phenomena observed under different conditions. The original tissue cultures were made at the Strangeways Research Laboratories in Cambridge, Dr. Canti having been associated at the commencement of the work with the late Dr. Strangeways. The apparatus used had to be specially constructed to Dr. Canti's designs, and the film was originally meant for the instruction of scientific workers. Since then its value for exhibition to public audiences has been fully recognised.

H.R.H. the Duke of York was present at the reception, which was largely attended by well-known members of the public who have shown special interest in scientific medicine, and by a representative group of the medical profession.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdr. G. P. Adshead is placed on the retd. list with the rank of Surg. Capt.

Surg. Comdr. H. E. Perkins is placed on the retd. list at own request with rank of Surg. Capt.

Surg. Lt.-Comdr. J. W. Tighe to be Surg. Comdr.

Surg. Lt. R. A. Graff to be Surg. Lt.-Comdr.

ROYAL ARMY MEDICAL CORPS

Col. E. W. Powell, late R.A.M.C., having attained the age for compulsory retirement, is placed on retd. pay.

Lt.-Col. and Bt. Col. G. A. D. Harvey to be Col.

The undermentioned relinquish their appts.: Maj. and Bt. Lt.-Col. J. M. Weddell, R.A.M.C., relinquishes his appt. as Asst. Professor of Military Surg. at the R.A. Med. Coll.

Maj. T. S. Eves to be Lt.-Col.

Lt. A. F. Kennedy to be Capt.

ARMY DENTAL CORPS

Maj. A. K. Macdonald, having attained the age for compulsory retirement, is placed on retd. pay.

The undermentioned Lts. (on prob.) are confirmed in their rank: W. A. O. Roe and C. A. Pank.

ARMY RESERVE OF OFFICERS

Maj. J. A. W. Webster, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY

Maj. W. G. Shakespeare, R.A.M.C., to be Divl. Adjt., 54th (E. Anglian) Div., vice Maj. A. R. Barlas, R.A.M.C., vacated.

Maj. J. H. Bayley, R.A.M.C., to be Divl. Adjt., 55th (W. Lan.) Div., vice Maj. C. L. Emmerson, R.A.M.C., vacated.

Maj. W. H. Kerr to be Lt.-Col. and to comd. 158th (Welsh) Fd. Amb.

Capt. C. de W. Kitcat resigns his commn.

Supernumerary for service with the O.T.C.—Maj. C. H. Carlton to be Lt.-Col. and to comd. the Med. Unit, Univ. of Lond. Contgt., Sen. Div., O.T.C.

Lt. J. M. F. Whitby (late Essex R.) to be Lt. with seniority.

INDIAN MEDICAL SERVICE

D. K. L. Lindsay to be Lt. (on prob.).

Capts. A. N. Narang, R. Labhaya, and N. C. Ramchandani relinquish their temporary commissions.

FOREIGN DECORATION

The King has given Brevet Colonel Philip Henry Mitchiner, T.D., F.R.C.S., R.A.M.C. (T.A.), His Majesty's Royal licence and authority to wear the Insignia of the Third Class of the Order of St. Sava, which has been conferred upon him by the King of Yugoslavia in recognition of valuable services rendered by him.

of the results as soon as might be for the guidance of His Majesty's Government and the information of the health committee of the League.—Mr. H. Ramsbotham replied: My noble friend is aware of the memorandum and inquiry in question. The effect of the economic depression on the health of school-children is being carefully watched by the Board and the local education authorities, as part of the ordinary work of the School Medical Service, and special measures to safeguard the health of the children are being taken in the areas where the depression is most acute. As stated in the latest annual report of the Board's Chief Medical Officer, the depressed state of industry does not appear to have exerted any measurable physical ill-health upon the child population. In these circumstances my noble friend does not think it necessary to institute a comprehensive inquiry on the lines suggested.

In reply to a similar question addressed by Mr. Gordon Macdonald to the Minister of Health, Sir E. Hilton Young replied: I am aware of the memorandum and inquiry. I do not think it necessary to attempt to supplement by means of another inquiry such as is suggested in the question, which might be both prolonged and costly, the substantial body of information available from official and other sources as to conditions in England and Wales which has, as the memorandum referred to shows, already been communicated to the health section of the League of Nations.

Maternity and Child Welfare

Mr. Hicks asked the Minister of Health whether he was aware that the maternity and child welfare centre in Cumming-street, Finsbury, had been given up, and the municipal midwifery scheme had been abolished on grounds of economy; and whether, in view of his pledges to set the maternal mortality-rate in the forefront of national health services, he would inquire into this reduction of the services of Finsbury.—Sir E. Hilton Young replied: I am informed that the facts are that early last year the borough council decided not to proceed with the erection of a proposed maternity and child welfare centre, and to substitute for the services of the municipal midwives a midwifery service provided by arrangement with the hospitals and nursing associations which serve the borough. I am not aware that there has been any reduction of maternity and child welfare services in this borough, but I have arranged that in ordinary course a review should be made of the working of the midwifery scheme recently instituted.

Changing Ambulance at Boundaries

Mr. Doran asked the Minister of Health if he was aware of the risks involved by the practice of transferring sick patients from one hospital ambulance to another at the various metropolitan and other town boundaries throughout the country; if he would issue a circular to metropolitan and other authorities asking them to discontinue the practice and establish a through service between the hospital and the patient's home; and, if in the absence of compliance with this request, he would introduce a Bill to sanction measures for the enforcement of such a service throughout the country.—Sir E. Hilton Young replied: The working of ambulance arrangements is a matter for the responsible local and hospital authorities, and such arrangements throughout the country as a whole naturally vary in different districts. I shall be glad to consider any evidence with which my hon. friend may desire to furnish me as to injurious effects resulting from existing practices.

Impure Imported Tinned Foods

Sir Mervyn Manningham-Buller asked the Minister of Health whether his attention had been drawn to the recent discovery by a county analyst of harmful bacteria in imported tins of Russian herrings and in condensed milk; and whether periodical analysis of such imported goods were undertaken by his department, or what steps were taken to check the imports of impure tinned goods.—Sir E. Hilton Young replied: I understand that certain brands of herrings and condensed milk have recently come under suspicion, and I am making urgent inquiries into the matter. In answer to the second part of the question, imported foods are examined by the local authorities at the ports of entry, and together with home produced articles also by inland local authorities.

Mr. Drewe asked the Minister of Healther whether, in view of the fact that recent samples of Russian condensed milk had been found to contain staphylococci, he would prevent the importation of Russian condensed milk in the future.—Sir E. Hilton Young replied: I understand that certain brands of imported condensed milk have recently come under suspicion, and I am making urgent inquiries into the matter. I may add that the presence of staphylococci in condensed milk does not necessarily make it injurious to health.

Death from Generalised Vaccinia

Mr. Groves asked the Minister of Health whether his attention had been drawn to the inquest held at Liverpool on Jan. 20th upon the body of an infant named Donald Hardy, whose death was attributed by the verdict of the jury to vaccination; and whether his medical officers had any explanation to offer as to why Government lymph, which was used in this case, should have led to this result.—Sir E. Hilton Young replied: Yes, Sir. I have made inquiries into this case and I am advised that there is no doubt that this child died from generalised vaccinia, a very rare sequel of vaccination, which is explicable only on the assumption of a peculiar susceptibility of the individual to the vaccine. The same batch of lymph had been used for at least 1200 other vaccinations without ill-effect.

MONDAY, FEB. 20TH

Notification of Leprosy

Major Procter asked the Minister of Health why leprosy had not been made a notifiable disease; and if he was prepared to make it notifiable.—Mr. Shakespeare (Parliamentary Secretary to the Ministry of Health) replied: My right hon. friend is advised that in the conditions which exist in this country leprosy is very unlikely to be conveyed from one person to another. The number of imported cases is very small, and no instance is known in which infection has resulted from contact with them. My right hon. friend is advised accordingly that compulsory notification is not required in the interests of the public health.

TUESDAY, FEB. 21ST

Health Insurance Benefit in Scotland

Mr. Duncan Graham asked the Secretary of State for Scotland if he was aware that regional medical officers in the employment of the Department of Health were in the habit of recommending disallowance of health insurance benefit in cases of persons who had not fully recovered from their illness but who were described as being fit for some form of light employment; and if he would state the number of persons whose benefit had been stopped on this ground during the years 1931 and 1932.—Sir Godfrey Collins replied: It is not the function of the regional medical officers of the Department of Health for Scotland to make any recommendation with regard to the stoppage of National Health Insurance benefit in the case of insured persons who have been examined by them, and in no case do they do so. The duty of these officers is to furnish the insured person's approved society with an opinion as to his capacity for work. The decision as to the continuance or stoppage of benefit rests with the approved society from whose decision the insured person has a right of appeal. I have no information regarding the matter referred to in the latter part of the question.

Mr. Duncan Graham asked the Secretary for Scotland whether he was aware that a letter had been sent to the insurance committee of the burgh of Glasgow, from the Department of Health for Scotland, to the effect that medical practitioners were signing certificates entitling persons to payment of health insurance benefit who were sufficiently recovered from their incapacity to enable them to resume their ordinary employment; whether this letter was issued by his authority; and, if so, would he state the grounds upon which it was sent.—Sir Godfrey Collins replied: In the ordinary course of administration an annual circular letter on the subject of the issue of certificates of incapacity for work to insured persons was recently sent by the Department of Health for Scotland to each insurance committee in Scotland. With the letter were enclosed statistics showing (1) the extent to which such certificates had been issued during the year ended June 30th, 1932, by each insurance practitioner in the insurance committee's area, and (2) the results of re-examinations by the Department's regional medical officers of insured persons to whom certificates of incapacity had been issued. The letter, of which I am sending a copy to the hon. Member, asked insurance committees to inquire into the problems presented by the statistics both as regards their area as a whole, and in respect of individual practices, and called attention to the importance of correct certification and to the unfortunate results accruing from laxity in this respect.

Royal Devon and Exeter Hospital.—The annual report states that at the end of September last 17 cases of fractured femur, the result of road accidents, were being treated, and that the average stay of these patients was between three and four months. The average stay of the 3122 in-patients was 20½ days, and the average cost per occupied bed was £129 14*s.* 7*d.* Out-patients made 57,700 attendances.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Accused Persons and Medical Certificates

On Monday, Feb. 20th, the House of Commons went into Committee of Supply on Civil Service Estimates. Captain BOURNE, Deputy-Chairman of Committees, was in the chair.

On a supplementary vote of £7500 for the salaries and expenses of the Lord Advocate's Department and other law charges in Scotland,

Mr. HORE-BELISHA (*Financial Secretary to the Treasury*) said that this increased expenditure was in regard to criminal prosecutions in Scotland. It arose from the Scottish Amalgamated Silks case.

Mr. McGOVERN said that one of the circumstances which arose in connexion with this Amalgamated Silks case was that Mr. John Gardiner, on the production of a medical certificate, was discharged. It was alleged that prominent members of the House of Commons did a considerable amount of interviewing and appealing in connexion with Mr. Gardiner when he was released. He was 57 years of age, and to his (Mr. McGovern's) knowledge had fairly decent health. Two other persons were also discharged. The accused were sent for trial and one man was discharged from the dock—again on the production of a medical certificate. It seemed to him that the judicial régime in Scotland at the moment was pursuing a policy of recognising the production of medical certificates in cases of people of substance and wealth, and that such persons were being discharged fairly readily on production of certificates of ill-health. The result of this great trial, involving about a dozen people, was watered down by the production of medical certificates and in various ways. He wanted to know if the production of medical certificates was part and parcel of the policy being pursued by the Lord Advocate and the Scottish Office in order to allow people of substance to evade their responsibilities.

Mr. NORMAND (*Solicitor-General for Scotland*) said he regretted that the Lord Advocate was prevented by illness from being present to reply to the attack which had been made upon him. For the suggestion that there had been some differentiation in favour of those who were well-to-do, and that others who were less well-off had been placed on trial, there was no shadow of reasonable ground whatever. It would be impossible for one to conduct the criminal administration of the law in Scotland if it were to be supposed that everybody originally charged must be brought to trial. He repudiated in the most emphatic terms the suggestion that the administration of justice in Scotland was open to suspicion by any reasonable man on the assumption that a man who was well-off would receive more favourable treatment than anybody else.

Mr. BUCHANAN said that he believed sincerely that the Lord Advocate's Department, presided over by the present Lord Advocate in Scotland, was corrupt at the present time. As soon as the Lord Advocate returned he would be prepared to face him in the House of Commons and say that his Department was corrupt, and that he himself was not capable of conducting his Department in a way that any business man would allow his department to be conducted. John Gardiner was liberated on the grounds of ill-health, and the evidence of that was a doctor's certificate. But the doctor was not examined on oath as to its correctness or otherwise. The certificate was sent to the Lord Advocate who was the sole custodian.

Mr. ALBERT RUSSELL: Does the hon. Member accuse the doctor of giving a false certificate?

Mr. BUCHANAN: No, but I say that he should go into the witness-box and be examined.

Mr. RUSSELL: A doctor gives a certificate on his soul and conscience, and he stakes his reputation on it.

Mr. BUCHANAN said that even if the doctor did that he had his duties as a citizen, and he should be examined on his medical evidence. When a doctor gave a certificate under National Health Insurance that a man was sick, he did it upon his soul and conscience, but it was not taken as final, and the man had to go to the regional doctor.

Mr. SKELTON (Under Secretary of State for Scotland) said it was most unfortunate that these attacks upon the professional conduct of the Lord Advocate should be made in his absence through illness. He did not propose to reply to them, but he most emphatically registered his protest.

After further debate,

The supplementary vote was agreed to by 178 votes to 2.

HOUSE OF COMMONS

THURSDAY, FEB. 16TH

The Children Act, 1932

Mr. LEES-JONES asked the Home Secretary when the whole of the *Children Act, 1932*, would be put into operation.—Sir J. GILMOUR replied: It was my original intention to bring this Act into operation on April 1st, but I hope to be able to introduce shortly a Bill to consolidate this Act with other enactments relating to children and young persons. It will be greatly for the convenience of those responsible for the administration of these Acts that the provisions of the Act of 1932 shall not come into force until the Consolidation Bill has passed into law. This may mean a short delay, but I intend that these provisions shall be brought into force in any case before the Summer Recess.

Privacy at an Inquest

Mr. COCKS asked the Home Secretary whether he was aware of the anxiety concerning the circumstances of the death by poisoning on Dec. 25th at St. Stephen's Hospital, Chelsea, of Madame Zeinep Vlora, an Albanian subject; whether permission was granted by his department to dispense with the usual public coroner's inquest, and, if so, for what reason and by whom was the request made; for what reason the death of Madame Vlora was kept secret for a month; whether any report on the case was made by the police; whether he could state its nature; and whether he would make a statement with a view to relieving the anxiety aroused by this affair.—Sir JOHN GILMOUR replied: I am not aware of the existence of any anxiety in this matter. Questions of diplomatic privilege arose in connexion with the attendance of witnesses at this inquest, and it was as a result of this being communicated to the coroner that, in the exercise of his discretion, he decided not to hold the inquest in public. The death was registered in the ordinary way on the day after the inquest.

Open-air Nursery Schools

Viscountess ASTOR asked the Parliamentary Secretary to the Board of Education the total number of children who entered school at the age of 5 last year after attending open-air nursery schools; and what proportion of these were free from mental or physical defects.—Mr. HERWALD RAMSBOTHAM replied: I am afraid no information is available which would enable me to give the figures in question, but I am aware that certain data may be obtained by individual authorities in the course of their administration of the School Medical Service, and I should be happy to send the noble lady any information on the subject which may be available.

Viscountess ASTOR: Is it not true that of the children entering in the ordinary way 37 per cent. are physically defective in some way or other, while of those who come from open-air nursery schools only 7 per cent. have any physical defect; and would it not be a very good thing for the Government to go on encouraging open-air nursery schools during this terrible depression?

No further answer was given.

Economic Depression and Public Health

Mr. RHYS DAVIES asked the Parliamentary Secretary to the Board of Education whether his attention had been called to the memorandum prepared by the health section of the League of Nations on economic depression and public health, and to their inquiry into the effects of the crisis on public health; and whether he would institute a comprehensive inquiry on these lines in Great Britain in respect of children of school age, with a view to the publication

NORTH-WEST LONDON MEDICAL SOCIETY.

TUESDAY, Feb. 28th.—9.30 P.M. (at the Willesden Constitutional Club House, 110, Walm-lane, N.W.), Dr. J. Stanley White: Recent Advances in Biological Therapy.

HUNTERIAN SOCIETY.

MONDAY, Feb. 27th.—9 P.M. (in the London Mansion House), Sir T. Crisp English: The Language of Facts. (Hunterian oration.)

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, March 3rd.—8 P.M. (at West London Hospital, Hammersmith-road, W.), Clinical and Pathological Meeting.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.

TUESDAY, Feb. 28th.—8.30 P.M. (at B.M.A. House, Tavistock-square, W.C.), Miss F. M. Huxley: American Experience.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

TUESDAY, Feb. 28th.—5 P.M., Dr. R. Cruickshank: Pneumococcal Infections. (Second Milroy lecture.)

THURSDAY, March 2nd.—5 P.M. (Last Milroy lecture).

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Feb. 27th, to SATURDAY, March 4th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square. Practical Problems in Medicine and Surgery. Tues., lecture by Mr. J. P Lockhart-Mummery on the Causes and Treatment of Incontinent Anus, at 4 P.M. (Free to Members and Associates of the Fellowship.)—NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W. Evening M.R.C.P. Course. Mon. and Fri., at 8 P.M.—PRINCE OF WALES'S HOSPITAL, Tottenham, N. Post-graduate Course in Medicine, Surgery, and the Specialties. All day instruction.—HOSPITAL FOR CONSUMPTION, Brompton, S.W. Post-graduate Course in Practical Pathology dealing with Laboratory Methods and the Interpretation of Results. Mon. and Thurs., 11.30 A.M. to 1 P.M.—NEW GENERAL HOSPITAL, Southend-on-Sea. Week-end Course of Practical Demonstrations in General Medicine and Surgery. Sat. and Sun., all day.—(Courses, &c., open only to Members and Associates of the Fellowship of Medicine.)

ST. MARK'S HOSPITAL, City-road, E.C.

THURSDAY, March 2nd.—4 P.M., Dr. Norman Henderson: The Value of the Opaque Enema in the X Ray Diagnosis of Pathological States of the Large Intestine.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, March 3rd.—4 P.M., Mr. W. A. Mill: The Diagnosis of Acute Mastoiditis.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

WEDNESDAY, March 1st.—4 P.M., Dr. H. C. Cameron: Demonstration of Children's Ailments.

ROYAL NORTHERN GROUP OF HOSPITALS.

WEDNESDAY, March 1st.—3.15 P.M. (at the Royal Chest Hospital, City-road), Dr. J. Maxwell: Empyema.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Feb. 28th, and THURSDAY, March 2nd.—5 P.M., Dr. W. Griffith: Eczema. (Chesterfield lecture.)

ST. PETER'S HOSPITAL FOR STONE, Henrietta-street, W.C.

WEDNESDAY, March 1st.—3 P.M., Mr. A. C. Morson: Relation of Genito-urinary Symptoms to Diseases of the Nervous System.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Feb. 27th.—2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Hinds Howell: Vascular Diseases of the Nervous System.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Martin: Demyelinating Diseases of the Nervous System.

WEDNESDAY, March 1st.—2 P.M., Dr. Martin: Out-patient Clinic. 3.30 P.M., Dr. James Collier: Clinical Demonstration.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Walshe: Cerebral Tumours.

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. James Collier: Virus Diseases of the Nervous System.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, March 2nd.—9 P.M., Dr. J. L. Livingstone: The Treatment of Lobar Pneumonia.

LONDON JEWISH HOSPITAL, Stepney Green, E.

THURSDAY, March 2nd.—4 P.M., Miss M. Landau: Sterility.

NATIONAL COUNCIL FOR MENTAL HYGIENE.

WEDNESDAY, March 1st.—5.30 P.M. (at 11, Chandos-street, Cavendish-square, W.), Dr. J. A. Hadfield: Anxiety.

ST. MARY'S HOSPITALS, Manchester.

FRIDAY, March 3rd.—4.15 P.M. (at the Whitworth-street West Hospital), Dr. Dougal and Dr. Brentnall: Antenatal Demonstrations.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, Feb. 28th.—4.15 P.M., Mr. A. H. Southam: Thyrotoxicosis.

FRIDAY, March 3rd.—4.15 P.M., Dr. A. Ramsbottom: Demonstration of Medical Cases.

GLASGOW POST-GRADUATE LECTURES.

TUESDAY, Feb. 28th.—3.30 P.M. (in the Faculty Hall, St. Vincent-street), Dr. W C. Macartney: Some Diagnostic Points in the Complications of Otitis Media.

WEDNESDAY, March 1st.—4.15 P.M. (at the Lock Hospital), Dr. D. Watson: Venereal Diseases (Female).

Vacancies

For further information refer to the advertisement columns

Aberdeen University.—Lecturer in Medicine. £400.

Bolingbroke Hospital, Wandsworth Common, S.W.—Hon. Surgeon to Ear, Nose and Throat Dept. Also Part-time Pathologist.

Bradford Municipal General Hospital, St. Luke's House.—Phys. and H.S.'s. Each at rate of £150.

Brighton, Royal Sussex County Hospital.—H.S. £150.

Brighton, Sussex Maternity and Women's Hospital.—Res. H.S. £130.

Burnley, Victoria Hospital.—H.P. At rate of £150.

Cambridge, Addenbrooke's Hospital.—Two H.S.'s and Res. Anæsthetist and Emergency Officer. Each at rate of £130.

Cambridge, Papworth Village Settlement.—3rd Asst. M.O. £300. Also H.P. At rate of £150.

Charing Cross Hospital, W.C.—Med. Reg., Surg. Reg. Each £150. Registrar to Nose, Throat and Ear Dept. £100. Also Part-time Medical Registrar. £50.

Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall, Great Barrow.—H.P. At rate of £100.

Connaught Hospital, Walthamstow, E.—Res. H.P. At rate of £100.

Coventry and Warwickshire Hospital.—Res. H.S. £125.

Dover, Royal [illegible] M.O. £180.

Farnborough [illegible] *Kent.*—Asst. M.O. £250.

Guernsey Stat[illegible]—Mental Officer. £800–£1000.

Hendon Isolation Hospital.—Res. M.O. and Asst. M.O. £500.

Lenham Sanatorium.—Asst. M.O. £400.

Liverpool, David Lewis Northern Hospital.—Cas. O. At rate of £120.

Liverpool Royal Babies Hospital, Woolton.—Res. M.O. At rate of £90.

Liverpool, Walton Hospital.—Res. Asst. M.O. £200.

L.C.C.—Temporary District M.O.'s. £140–£200. Pathologist at Group Laboratory, Mile End Hospital. £1100. Also Asst. Pathologist to Group Laboratories. Each £650.

London Homœopathic Hospital, Great Ormond-street, W.C.—Phys. Also M.O. for X Ray Dept.

Manchester [illegible] s. H.S. £120.

Manchester [illegible] *s of the Throat and Ch*[illegible] torium. £200.

Manchester [illegible] *le-street.*—Two Asst. M[illegible] t rate of £150.

National Te[illegible], *N.W.*—Hon. Asst. Physician.

Northampton General Hospital.—H.P. and H.S. Also H.S. to Ear, Nose and Throat Dept. Each at rate of £150.

Nottingham General Hospital.—H.P. At rate of £150.

Oswestry, Shropshire Orthopædic Hospital and Agnes Hunt Surgical Home.—H.S. At rate of £200.

Oxford County and City Mental Hospital, Littlemore.—Asst. M.O. £400.

Plymouth City General Hospital.—Med. Supt. £1000.

Portsmouth, St. Mary's Hospital, &c.—Third Asst. Res. M.O. £250.

Preston, Sharoe Green Hospital.—Res. Asst. M.O. At rate of £150.

Queen's Hospital for Children, Hackney-road, E.—H.P. and Cas. O. Each at rate of £100.

Radium Institute, Ridinghouse-street, W.—Res. Surg. Reg. At rate of £250.

[illegible] . H.S. At rate of £100.

[illegible] *ast, S.W.*—Membership.

[illegible] *Southwark, S.E.*—H.S. At rate of £150. Also Asst. H.S., Clin. Bacteriologist, and Pathologist. Each £100.

Royal National Orthopædic Hospital, 234, Great Portland-street, W.—H.S. At rate of £150.

St. Albans and Mid-Herts Hospital and Dispensary.—Res. H.S. £150.

St. John's Hospital for Diseases of the Skin, 49, Leicester-square, W.C.—Out-patient and In-patient Med. Regs. Each £50.

St. Mary's Hospital, W.—Director of V.D. Clinic. £400.

St. Peter's Hospital for Stone, &c., Henrietta-street, W.C.—H.S. At rate of £75.

Salford Royal Hospital.—H.P. and H.S. Also Cas. H.S. Each at rate of £125.

Shrewsbury, Royal Salop Infirmary.—Res. Surg. O. £250. Also Cas. O. and Res. Anæsthetist. At rate of £160.

Stafford County Mental Hospital.—Temp. Asst. M.O. £400.

Sutton and Cheam Hospital.—Res. M.O. £150.

Swindon and North Wilts Victoria Hospital.—Res. M.O. At rate of £125.

West [illegible] *ital.*—Res. H.P. At rate of £200.

West [illegible] *mmersmith-road, W.*—H.P. Two [illegible] Also Res. Anæsthetist. Each [illegible]

Weston-super-Mare General Hospital.—Res. H.S. £150.

Whipps Cross Hospital, Whipps Cross-road, Leytonstone, E.—Specialist Consultant Gynæcologist. £50, and £5 5s. per visit.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Droitwich, Worcester; Wells, Norfolk; Almondbank, and Methven, Perth.

MEDICAL NEWS

University of Oxford

In a congregation held on Feb. 11th the degree of Bachelor of Medicine was conferred upon Charles Hilton Fagge.

University of London

On Tuesday, March 14th, Dr. C. Bruce Perry will read a lecture, which was prepared by the late Dr. Carey Coombs, on Thirty Years' Progress in the Study of Rheumatic Heart Disease. The lecture will be given at 5.30 P.M., at University College Hospital medical school, Gower-street, W.C., and Dr. F. J. Poynton will take the chair.

Royal College of Surgeons in Ireland

The Mary Louisa Montgomery lecture was delivered in the hall of the college on Feb. 17th by Mr. Maurice H. Whiting, who took as his subject Modern Developments in Cataract Extraction.

Gresham College

Four lectures on Health and Industry will be given by Sir George Newman at this college, Basinghall-street, London, E.C., at 6 P.M. on Feb. 28th and March 1st, 2nd, and 3rd. Admission without ticket.

A High Mental Recovery-rate

Reporting on his annual visit to the Stirling District Mental Hospital at Larbert, Dr. H. C. Marr, senior commissioner of the Scottish Board of Control, states that 76 patients were discharged as cured, a recovery-rate of 53·9 per cent., which is much above the average in Scottish mental hospitals. Dr. Marr suggests that the rate may have some relation to the use of physical therapy.

International Congress of Hydrology

The 14th International Congress of Hydrology, Climatology, and Medical Geology will be held at Toulouse from Oct. 4th to 8th, under the presidency of Prof. Paul Sabatier and Prof. E. Abelous. The subjects of discussion will be the thermo-mineral waters of the French Pyrenees and their geological grouping; the rare gases of mineral waters; climatic cures and pulmonary tuberculosis; indications for bracing cures for children; primary non-suppurative infections of the nervous system; utilisation of the French spas by the army medical corps; and the legal control and survey of mineral waters. Sir James Purves-Stewart will introduce the English report on nervous infections. Further particulars of the congress may be had from Prof. Serr, hon. general secretary of the congress, at the Faculté de Médecine, Toulouse, Haute Garonne, France.

Moorfields Hospital Dinner

The annual dinner of past and present students of the London Royal Ophthalmic (Moorfields) Hospital was held at the Langham Hotel on Feb. 9th, with Sir Arnold Lawson in the chair.

Mr. Charles Goulden, dean of the medical school, stated that the school was in a flourishing state. During the year 1931–32, 117 students had attended the practice of the hospital, and of these 67 were new students. A total of 328 lectures had been given. The school still prepared by far the largest proportion of students who sat for the diploma of ophthalmological medicine and surgery. During the past year, of 31 candidates who were successful in the first part of the examination for this diploma, 21 received their instruction at Moorfields, and of the 31 who were successful in the second part, 25 were students of the hospital. Rebuilding of the out-patients' department and the medical school will begin in March, and when it is completed the facilities for clinical instruction and laboratory teaching will be greatly improved.

Radium in West Sussex

On behalf of the Sussex council of the British Empire Cancer Campaign, Lord Leconfield, Lord-Lieutenant of the county, at a meeting at Chichester on Jan. 20th, handed over a gift of 75 mg. of radium for the Royal West Sussex Hospital. Fifteen months ago a campaign was launched whose objects were: (1) the provision of radium for the treatment of cases in West Sussex; (2) a supply for East Sussex; and (3) the establishment of a deep ray therapy plant in a central place in the county. The first object has now been achieved by the distribution of over 75,000 leaflets and the collection of over £4000. In receiving the gift the Mayor of Chichester said that heretofore the nearest place where radium treatment could be obtained was Southampton, and travelling north from Chichester there was nothing to be found between it and London. The hospital had possessed since 1930 some 36 mg. of radium, the cost of which was £513.

London Jewish Hospital

A surgical ward has been given to this hospital by Mrs. Dickman. It will be known as "The Esther Mohnblatt Ward"—from the donor's maiden name.

Heating and Ventilation

A paper on Recent Developments in the Warming and Ventilation of Buildings will be read by Mr. J. L. Musgrave, past president of the Institution of Heating and Ventilating Engineers, at a meeting of the Royal Society of Arts which will be held at its premises in John-street, Adelphi, London, W.C., at 8 P.M. on Wednesday, March 8th.

Enlargement of Sale War Memorial Hospital

Last week Mr. Cyril Atkinson, M.P. for Altrincham, opened a new wing of this hospital containing 20 beds entirely for women. The ground floor is occupied by a maternity ward of eight beds, one private ward, and the necessary labour ward, bathrooms, and kitchen. On the first floor there are an eight-bedded ward, three private wards, and a theatre. The old building has been so rearranged as to afford a children's ward of six beds.

Waltham Joint Hospital Inquiry

The result of the Ministry of Health's inquiry into complaints regarding the deaths of two boys in the Waltham Abbey Infectious Diseases Hospital, and into its general administration, is completely to exonerate the institution. It is found in the case of one boy that treatment was unsuccessful because of the patient's very serious condition when he had only partially recovered from scarlet fever. The other boy "died from hæmorrhage following scarlet fever, which hæmorrhage could not have been foreseen or prevented, and was not caused by a previous traumatic injury," as had been suggested. In reply to the complaint of the Chingford urban district council that the number of "return" cases is abnormal, it is pointed out that in 1931 there was a larger number than usual on account of the heavy incidence of scarlet fever. The Ministry promises, however, to make suggestions calculated to minimise the number of return cases. In the meantime it is suggested that in times of pressure medical officers should advise isolation in hospital only of patients who cannot adequately be treated at home.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Feb. 27th.—8 P.M., ODONTOLOGY. Mr. F. N. Doubleday: Evidence Regarding the Different Types of Periodontal Disease.

WEDNESDAY, March 1st.—5 P.M., HISTORY OF MEDICINE. Papers: Mr. James Kemble: The History of Occupational Diseases. Dr. E. Stolkind: The History of Allergy and Allergic Diseases (Bronchial Asthma, Hay-fever, Migraine, &c.).

THURSDAY.—8.15 P.M., TROPICAL DISEASES AND PARASITOLOGY. Discussion: The Diagnosis of Chronic Diarrhœas. Opening papers: [illegible] The Differential Diagnosis of t[illegible] Diarrhœas. Dr. P. H. Manson-[illegible] Chronic Diarrhœas as Seen in the Tropics. [illegible] Lionel E. C. Norbury: Chronic Diarrhœa from the Surgical Aspect. Other speakers will take part. Members of the Section of Medicine are specially invited to attend.

FRIDAY.—4.45 P.M., *LARYNGOLOGY*. (Cases at 4 P.M.) Discussion: Acute and Chronic Inflammatory Disorders of the *Ethmoidal and* Sphenoidal Sinuses. Openers: Prof. Lemaitre (Paris), Dr. Aubin (Paris), and Mr. A. Lowndes Yates. 8.30 P.M., ANÆSTHETICS. Discussion: Anæsthesia in Intracranial Surgery. Openers: Dr. Norman Dott, Dr. Z. Mennell, Dr. J. F. Ryan, and Dr. J. H. T. Challis. Other speakers will take part.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Feb. 27th.—*8.30 P.M., Discussion on the Increased* Frequency of Fevers of the Undulant Type in Non-tropical Countries and its Relationship to Infection by Cow's Milk; to be introduced by Dr. P. H. Manson-Bahr, Prof. G. S. Wilson, and Dr. Theodore Thompson.

WEDNESDAY, March 1st.—9 P.M., Mr. V. Zachary Cope: Pathology of Acute Abdominal Disease. (Second Lettsomian lecture.)

particular type of paroxysmal tachycardia. The drug is necessary and efficacious—no other remedies have any action—in paroxysmal tachycardia of ventricular origin. In the other types of paroxysmal tachycardia quinidine is of doubtful value and often useless, but vagal compression is successful in a certain proportion of cases. The determination of the site of origin of paroxysmal tachycardia without electrocardiographic survey is pure guess-work.

There is room for considerable further instrumental research on the action of adrenaline on the myocardium and conducting tissues. The drug has a specific and peculiar action in effecting regularity and acceleration of the heart in nodal rhythm, but the deductions to be drawn from this clinical curiosity and applied to conditions like Stokes-Adams disease are not yet clear.

FURTHER INVESTIGATION OF DISTURBANCE OF KNOWN CARDIAC NATURE

Such illnesses include tachycardia, precordial pain, cardiac irregularity with suspected block, suspected toxic cardiac myopathy, and fibroid or senile cardiac degeneration.

Tachycardia may be of a nature easily and usually determined by ordinary clinical examination, but the diagnostic value of an electrocardiograph in determining the site of origin of true paroxysmal tachycardia is of unique importance.

Precordial pain of known cardiac origin may be anginal or due to coronary thrombosis. The treatment and prognosis of these two conditions are very widely different; for example, the administration of amyl nitrite to a patient suffering from coronary thrombosis may be definitely harmful or even fatal. The drug may lower pressure and permit further thrombosis. Distinction between angina pectoris and coronary thrombosis is often possible without electrocardiographic review, and obviously such review is frequently impracticable or inconvenient. When practicable, however, differentiation is clear. There are curves pathognomonic of angina pectoris, and these differ substantially from those of coronary thrombosis. Moreover, the cardiac scars and infarctions of coronary thrombosis can be detected with certainty long after the subsidence of the acute process, and such detection aids in diagnosis and treatment.

Cardiac irregularity with suspected block should always recall the aid of instrumental scrutiny. Ordinary clinical examination in these conditions is sometimes very uninformative.

Toxic cardiac myopathy may be brought about by digitalis, as already mentioned, but there are many other causes. Not very much evidence of value about the myocardium can be instrumentally obtained in cases of ordinary toxic goitre, but decidedly important data are sometimes secured in conditions like pyorrhœa. In the latter case repeated cardiac infarctions have been demonstrated, followed by amelioration under dental treatment.

Not much evidence of value is obtained by the examination of merely senile and fibroid hearts, except that occasionally bundle branch block is unexpectedly revealed in such cases and materially alters the prognosis. The electrocardiographic signs of bundle branch block are decisive, and there is no other means of detecting the lesion. It is especially important in the matter of prognosis that serial records be taken of this condition.

FURTHER INVESTIGATION OF PAINFUL OR CONSTITUTIONAL ILLNESS OF OBSCURE ORIGIN

Myocardial disease often mimics disease elsewhere. The conspicuous difficulty in angina pectoris when the pain is referred to the abdomen or the trunk is well known. Paroxysmal auricular fibrillation may offer great difficulties by its power of simulating abdominal catastrophe. Sundry forms of heart-block mimic apoplexy; epilepsy and Stokes-Adams disease will be recalled in this connexion. In all these difficulties electrocardiographic study will often—not always—yield data of diagnostic value. In particular, the electrocardiographic changes during and immediately following an attack of true angina pectoris are pathognomonic and unlike those seen in any other condition. They serve to differentiate angina pectoris not only from coronary thrombosis but from other conditions of intense pain. Thanks to some exemplary research it is now known that pain, such as gall-stone colic, does not disturb the electrocardiograph. In passing, a possible fallacy must be mentioned: liability to angina pectoris may coexist in a patient with the presence of pain-producing lesions such as gall-stones.

AS A GUIDE IN PROGNOSIS

Prognosis depends on diagnosis, and in so far as an electrocardiogram assists in, or reveals, diagnosis it may indirectly be of surpassing value in prognosis. With one exception, however, electrocardiographic records are not, of conspicuous direct value in prognosis unless serial records are taken to determine the evolution or regression of a lesion such as myocardial gumma or infarct. The exception is auricular fibrillation, and in this common and important condition it has been found that the amplitude of the fibrillation waves is in general larger in the rheumatic cases and that a prolonged or aberrant Q R S notably diminishes the expectation of life.

CONVALESCENCE

Related to prognosis is convalescence, and here it may be stated dogmatically that in the determination of cardiac myopathy following acute fevers the electrocardiogram should be resorted to much more freely. This particularly applies to post-influenzal debility, but the most thorough survey has hitherto been made in diphtheria. The most serious cardiac disabilities, totally unsuspected under clinical examination, may be revealed by electrocardiographic scrutiny, and these include conducting lesions and focal myocardial lesions. Conversely, an electrocardiogram may sometimes reverse an unnecessarily gloomy prognosis based solely upon auscultation. As for diphtheria, so for scarlet fever and typhoid.

Obviously no case convalescent from rheumatic fever or chorea is fully assessed without electrocardiographic examination. One has a feeling, based on an insignificant few cases hitherto, that the tendency is to prolong convalescence in these diseases unnecessarily.

Conclusions

If ever an instrument was expressly capable of yielding massed statistical research and report of international scope, that instrument is the electrocardiograph. A beginning has already been made on such widely different topics as chloroform anæsthesia, tobacco poisoning, and athleticism, but one cannot but deplore the absence as yet of really large-scale collaboration in amassing data and comparing results. The great amount of work already done should stimulate wider and wider usage of the instrument and more pooling of reports. Such reports will emanate from individual workers, but their cumulative value in matters of diagnosis and prognosis could, if properly collected and examined in conjunction with long-term clinical data, add heavy and valuable volumes to the science of medicine.

FOLIA OPHTHALMOLOGICA ORIENTALIA

UNDER this title a new ophthalmological quarterly is intended to serve the southern section of the Mediterranean countries together with Mesopotamia and Persia. It is published in Jerusalem under the editorship of Dr. Aryeh Feigenbaum, and the articles are in one of three languages, French, English, and German, each article being accompanied by short summaries in all three languages. There are over 30 distinguished collaborators, mostly European, but some from the Eastern countries; the aim of the production being twofold, on the one hand to foster close collaboration between the ophthalmological specialists of the Middle East, and on the other to

NOTES, COMMENTS, AND ABSTRACTS

THE PLACE OF THE ELECTROCARDIOGRAPH IN MEDICINE

BY G. F. WALKER, M.D., M.R.C.P.

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THE electrocardiograph is an instrument of precision in diagnosis and prognosis. Its utility is very wide but its usage singularly narrow. A fair number of patients are sent for electrocardiographic examination when this is superfluous, but a very large number are deprived of the benefits of diagnostic exactitude because the scope and powers of the instrument are not as yet sufficiently realised. The object of this paper is to survey as fairly as possible, and from the point of view of a general clinician, the place of the electrocardiograph in medical science.

A few disabilities and limitations of the instrument must first be admitted. It is costly and complex, and a peculiar knack is required for its handling. Records taken by it represent a very short sample of the heart's action, and if they show a lesion they give no clue to its pathological nature nor to whether it is active or quiescent. In certain cases small and clinically unimportant lesions cause conspicuous changes in the records and, conversely, a normal record is in certain circumstances possible from a diseased heart. There is a very wide range of normal in electrocardiographic records, and this applies especially to children. Moreover, many records tend to be vitiated or reduced in value by somatic tremors or visceral movements. Finally, in a few heart cases the electrocardiograph is totally superfluous, and a step-ladder will give better evidence of the presence of cardiac reserve or otherwise. Hence, as in all technical aids to clinical medicine, electrocardiographic reports must be considered alongside other data, as contributory to general diagnostic investigation.

But there are very many heart illnesses, some frank and some highly obscure, in which electrocardiographic examination yields valuable information. In a certain number of diseases and disorders the data secured by electrocardiographic examination cannot be secured in any other way whatever. It is notable that in those very cases the question of complete diagnostic precision is often of supreme importance to the patient in connexion with employment, life insurance, or travel.

The clinical utilities of the instrument may be considered under several heading, as follows:—

(*a*) In the investigation of the nature of cardiac arrhythmia.
(*b*) In the assessment of myocardial power and integrity, with special reference to medical or surgical treatment.
(*c*) In the determination of lack of ventricular balance.
(*d*) As a control in therapy.
(*e*) For further investigation of illness of known cardiac nature.
(*f*) For further investigation of painful or constitutional illness of obscure origin.
(*g*) In determination of prognosis of many diseases.
(*h*) As a guide to convalescence in many acute fevers.
(*i*) As an instrument of research.

Before considering these it is necessary to recall that the basis of the value of the electrocardiograph is its power to delineate separately auricular contraction, ventricular excitation, ventricular contraction, and ventricular relaxation. The records are obtained from three different angles of observation, and a timing mechanism enables time relationships of muscle activity to be determined with the greatest accuracy down to one-fifth of a second.

How the Electrocardiograph Helps the Clinician

In what follows there is no attempt to deal with the interpretation of the records nor the mechanism of production of the different types of curves. Th review is purely in answer to the question from general clinician: How can this instrument hel me?

INVESTIGATION OF CARDIAC ARRHYTHMIA

When the pulse is irregular the exact diagnos is often highly uncertain. The following are th common causes, and they will be recognised once as widely different, alike in ætiology, trea ment, and prognosis: sinus arrhythmia; extr systoles, including paroxysmal tachycardia; parti or complete heart-block at any point; auricul fibrillation; and auricular flutter.

The differential diagnosis in all these, and in the combinations and complications, is infallibly disclose by electrocardiographic examination.

ASSESSMENT OF MYOCARDIAL POWER AND INTEGRITY

Apart from ordinary clinical examination it often necessary to secure definite information to the myocardium in conditions such as diabete exophthalmic goitre, and prostatic hypertroph Subject to the limitations mentioned, the instrumen is often of value in delineating conditions such as diminution in auricular force, recent coronar occlusion, cardiac infarction, impaired myocardi nutrition, or diminished conductility.

Conversely, repeated normal electrocardiographi records add considerably to the data required f prognosis in conditions such as cholelithiasis; or i other cases they may fortify a clinician's opinio that symptoms ostensibly and even aggressivel cardiac may in fact be of other origin or exaggerate

DETERMINATION OF LACK OF VENTRICULAR BALANCE

The question of inordinate unilateral ventricula hypertrophy arises in conditions such as lea poisoning, hypertension, and long-continued physica stress. The extent of this hypertrophy can b ascertained with precision by instrumental method only. Sometimes such instrumental ascertainmen is strikingly at variance with the impressions gaine from ordinary clinical examinations.

Other conditions in which an accurate estimatio of unilateral ventricular hypertrophy is of hig value are exophthalmic goitre, adherent pericardium aortic disease, chronic bronchitis with emphysema bronchiectasis, and pulmonary stenosis.

CONTROL IN THERAPY

The chief utilities of the instrument in this respec centre round accurate diagnosis and the clinica employment of digitalis, quinidine, adrenaline, an drugs acting on the blood pressure. It is highl desirable to know the point at which the optimu effect of digitalis is being exerted. Beyond a certai point the drug exerts a toxic and blocking effec on the conductile and contractile tissues of th heart. By delicate and pathognomonic changes in the T-wave, unlike changes seen in any other known condition, it is possible to predict digitalis saturation and impending intolerance a considerable time before the better-known general constitutional signs of digitalis poisoning appear. Indeed, when these do appear, irreparable damage has probably already been done to the conducting tissues of the heart, and therefore every patient requiring to take digitalis for long periods should be periodically examined by electrocardiograph with particular scrutiny of the T-wave. Digitalis is probably over-prescribed, and for two reasons. Firstly, there may be erroneous diagnosis, as for example when extrasystoles mimic auricular fibrillation; secondly, the signs and symptoms of ordinary heart failure may pass insiduously into those of toxic heart failure from digitalis.

The utilities of quinidine depend on a completely accurate diagnosis of fibrillation or flutter, or a

ADDRESSES AND ORIGINAL ARTICLES

THORACIC SURGERY

BY H. MORRISTON DAVIES, M.D., M.CHIR. CAMB., F.R.C.S. ENG.

MEDICAL SUPERINTENDENT, VALE OF CLWYD SANATORIUM; CONSULTING SURGEON TO UNIVERSITY COLLEGE HOSPITAL, KING EDWARD VII. WELSH NATIONAL MEMORIAL ASSOCIATION, LANCASHIRE COUNTY SANATORIUMS, AND CHESHIRE JOINT SANATORIUM

LECTURE I[*]

THE two lungs are completely separated from each other by the mediastinum; the two pleural cavities are independent. But when the question of surgical intervention arises, the two halves of the thorax cannot be considered individually. The effect or the complications of disease on the one side may materially influence the physiological state of the opposite lung; treatment of the one side may so embarrass the other that death ensues. The crux of the whole situation is the mediastinum and, to a lesser extent, the heart.

The mediastinum is not a rigid vertical partition; it must be regarded rather as a veil, comparatively taut in some people but surprisingly lax in others. Disease which causes thickening of the pleura will stiffen and even immobilise the mediastinum. Except under these pathological conditions, it is a mobile structure, but so balanced by the perfect elasticity of the lungs on either side that it is, in health, practically devoid of movement. Deprived, however, by disease of this equipoise, it loses its apparent stability and yields to every displacing force, being either pushed away or drawn towards the affected side, carrying with it, among other structures, the heart.

Displacement of the Mediastinum

The heart is extremely tolerant of certain movements, but most intolerant of others. A slow progressive displacement up to an inch, or even more, produces no disturbance recognisable either by clinical or electrocardiographic examination. A rapid displacement is not well tolerated, but as such change is associated usually with a rapid diminution of lung volume, it is difficult to assess to the heart displacement and to the diminished lung volume their correct responsibility in the production of change in the rate and quality of the pulse and in the dyspnœa.

A mediastinum and heart which have been deprived of their normal balance and have become displaced will show some recovery towards the normal position during inspiration, but an increased displacement on expiration. The to-and-fro movement is slight during quiet respiration, but becomes greatly increased with deep respirations. Provided no especial call is made for deep breathing, this slight though constant to-and-fro movement is of little consequence so long as the thoracic walls are rigid and complete. Once, however, an opening is made through the chest wall or the wall itself is made mobile by resection of lengths of rib, the mediastinum and heart may flap constantly to-and-fro with every respiration. This, together with the associated disturbances of the normal physiological condition, produces a state of affairs which, if unchecked, has a rapidly disastrous ending.

Changes in the position of the mediastinum in a closed chest cannot take place without alterations of the lung volume. Pathological conditions, such as an effusion or a pneumothorax, produce a positive intrapleural pressure, and take up space in the hemithorax. This necessitates a partial collapse of the lung on the same side, a displacement of the mediastinum towards the sound side, and, of necessity, therefore, a diminution in the volume of the opposite lung also. If the volume of the lung on the affected side is diminished rapidly, as with massive collapse, and, to a slight extent, with pneumonia, the mediastinum is drawn across to that side, and the opposite lung must expand to fill up the enlarged hemithorax. Such increase in size, when produced acutely, is partly by dilatation of the alveoli, but partly by increased engorgement of the vessels and by œdema. This doubtless contributes to the breathlessness seen in massive collapse. The mediastinal displacement associated with chronic fibroid contraction of one lung is of such gradual onset that the contralateral lung can compensate by a pure emphysema. In such cases, moreover, the mediastinum resists the drag, being to a great extent fixed by the thickened and adherent pleural membranes.

These changes in the position of the mediastinum, if of slow onset, can be, and often are, symptomless, but, if abrupt, are always accompanied by symptoms. Reference has already been made to the cardiac manifestations and to the dyspnœa; especial reference must be made to one other symptom, pain. The mediastinum has its fascial attachments front and back. The lungs are attached to it by their roots. In addition, it is surrounded by the parietal pleura, which has certain pouch-like protrusions which reach up to or across the midline. These incursions doubtless account for the mobility of the mediastinum, and also for its fixation when there has been intrapleural inflammation. Displacement of the mediastinum cannot occur without dragging on its attachments to the surrounding structures, including the parietal pleura. This drag affects equally the attachments both to the right and left, irrespective to which side the displacement is. In a case with unilateral disease in which the mediastinum is either drawn over to the affected or displaced to the opposite side, pain may, therefore, occur in the interscapular or parasternal regions on the sound side, thus causing anxiety as to the possibility of extension of disease to that side.

The most important of the pleural reflections in relation to the mediastinum is the approximation of the membranes of either side, in front of the mediastinum, and behind the sternum from the first to the third rib. To the anatomist there is no particular asymmetry at this point, but to those who practise artificial pneumothorax the comparative frequency of a hernial protrusion of the left sac to the right, and the rarity of a similar protrusion of the right sac to the left is very striking. Another important deviation is of the right pleural sac behind the mediastinum, including the heart and œsophagus, in front of the bodies of the eighth and ninth dorsal vertebræ—the vertebro-mediastinal pleural sinus.

These pleural reflections, when the pleural cavity is filled with an effusion or air, may become stretched and form herniæ, which bulge across the middle line and encroach on the opposite lung. This herniation is always combined with displacement of the mediastinum and the two combined cause a considerable reduction, especially during expiration, in the volume of the contralateral lung on which the patient depends bring to the notice of their colleagues in the West the special peculiarities of ophthalmic practice in that part of the world. The first number, published in November last, contains much interesting matter, and includes articles by Max Meyerhof, of Cairo, on fifty years of ophthalmological progress in Egypt, and by R. H. Elliot (London) on the special features of ophthalmological practice in Eastern countries. I. Taborisky (Haifa), Rowland P. Wilson (Giza), R. Peters (Basra), and A. Sinai (Tel-Aviv) write on different aspects of trachoma; A. Trantas (Athens) on the location of foreign bodies in the ciliary and post-ciliary regions; Moh Sobhy Bey and E. J. Attie (Cairo) discuss Barraquer's method of cataract extraction; N. Shimkin (Caiffa) the bitemporal hemianopsia of pregnancy; and Aryeh Feigenbaum (Jerusalem) the origin of lenticonus anterior. If succeeding numbers keep up the standard of the first issue they will be more than worth the modest subscription.

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[*] The first George Haliburton Hume lecture for 1933, delivered before the Newcastle-upon-Tyne and Northern Counties Medical Society on Feb. 2nd. The second lecture will appear in a forthcoming issue of THE LANCET.

DR. MARY WALKER

Mrs. C. W. M. Poynter, 1306, South Thirty-fifth-avenue, Omaha, Nebraska, U.S.A., is working on a biography of the late Dr. Mary E. Walker, of Oswego, New York, and would be glad of any information about her visit to this country in 1866–67, when she went the round of the London hospitals and gave many lectures in England and Scotland. It appears from our own columns of the time that Dr. Walker had practised medicine in New York for five years before the war between North and South broke out, when she volunteered for the Federal Army Medical Service, and served through a campaign of four years, being taken prisoner and exchanged after a few months for a male surgeon. Her visit was largely occupied with controversy on the dress appropriate for women. Dr. Walker herself was of opinion that, from a physiological point of view, the great weight of clothes then carried from the waist was open to objection, and her own garments were suspended from the shoulders, which she described as "a physiological dress with moral bearings." THE LANCET, although hesitant about the advisability of Dr. Walker's example being generally followed by her sex, commended her to the courtesy of hospital authorities and the medical profession; but a lecture which she gave at St. James's Hall on Nov. 20th, 1866, on the experiences of a female physician was, we are told, "marred by the singing of Rule Britannia and the more familiar but less refined Slap Bang," until police assistance was secured. There was, we gather, no impediment put in the way of Dr. Walker's visits to hospitals, for it is stated that she attended operative practice at the Middlesex Hospital, where she witnessed removal of dead bone from a jaw and the attempted reduction of an old dislocation of the humerus.

BROADCASTING THE LOSS OF DRUGS

THE British Broadcasting Corporation informs us that, while the S O S service is normally restricted to matters of life and death, the service has hitherto been extended to messages referring to the loss or theft from doctors' cars of bags containing dangerous drugs, with appeals to the public for help in tracing them. Five messages of this kind were broadcast from the North Regional transmitter, and two from other transmitters during 1932. The Corporation point out that, while assistance of this kind has been given in the past, the loss of a bag containing dangerous drugs hardly fulfils the condition of extreme urgency which justifies this service, since, in their view, it is unlikely that anyone who had stolen or found a doctor's bag would deliberately sample its contents and run the risk of being poisoned. This intimation must, it seems, be taken as a warning that such messages will in future be accepted for transmission with some reluctance, and may eventually perhaps be refused.

IODINE COMPOUNDS IN THYROID DISEASE.—In the report of a discussion at the Royal Society of Medicine, published in our last issue (p. 365), Prof. C. R. Harington is credited with saying that "the most suitable mode of administration of iodine was in the form of diuretyrosine." This last word should, throughout the report, be *diiodotyrosine.*

THE author of "Things to be Desired, or Daily Health Reminders," reviewed last week in this column, was Dr. W. W. Shrubshall. We regret the omission of the second letter "h" from his name as printed.

Appointments

GALLOWAY, T. M'LAREN, F.R.C.S. Edin., has been appointed Asst. Physician, Cumberland Infirmary.

JONES, NANCY LLEWELLYN, L.R.C.P., M.R.C.S., Resident Anæsthetist, Queen Charlotte's Maternity Hospital.

LAWSON, D. F., B.Chir. Camb., L.R.C.P. Lond., M.R.C.S., Hon. Asst. Radiologist, Leicester Royal Infirmary.

SMITH, F. W. G., M.D. Dub., D.P.H., D.O.M.S., Refraction Assistant, East Ham Memorial Hospital.

WEST, H. O., M.D., B.S. Lond., Medical Superintendent, St. Giles's Hospital, Camberwell.

St. Thomas's Hospital, London: GOADBY, H. K., M.D. Camb., M.R.C.P. Lond., Deputy Director of the Medical Unit; CHAMINGS, A. J. W., M.B. Camb., F.R.C.S. Eng., Chief Assistant in the Ear, Nose, and Throat Department; MARSHALL, E. H., M.R.C.S., Chief Assistant in the Physiotherapy Department.

Certifying Surgeons under the Factory and Workshop Acts: ADAM, D. C., M.B., Ch.B., D.P.H. Edin. (Ilfracombe); BLAKELY, A. D., M.D. Glasg. (Longton, Stafford); JOHN, A. H., M.B., B.S. Lond. (Stoke, Stafford), and PALMER, W. H., M.B., B.S. Lond. (Hayle, Cornwall).

Births, Marriages, and Deaths

BIRTHS

BENEY.—On Feb. 18th, at 3, Wilbraham-place, S.W.1, to Dorothea (née Pridden), wife of Charles Beney, 130, Harley-street, and Keston, Kent—a son.

MORTON.—On Feb. 19th, at a nursing home, the wife of Dr. Robert Morton, Ashbourne-avenue, Golders Green, London, of a daughter.

SELOUS.—On Feb. 17th, at a nursing home, the wife of Cuthbert F. Selous, M.B., of South Lawn, Clarence-road, Tunbridge Wells, of a daughter.

WALLACE.—On Feb. 1st, at Murrayfield, Horsham, Sussex, the wife of J. H. Wallace, L.D.S., of a daughter.

MARRIAGES

DOWLING—HEARN.—On Feb. 14th, at Brompton Oratory, Lieut.-Colonel F. T. Dowling, R.A.M.C. (retd.), to Jessie Florence, widow of Alfred Booth Hearn, of The Gleanings, Folkestone.

EVERETT—PERRY-GORE.—On Feb. 18th, at St. John's Church, Regent's Park, N.W., Leslie S. Everett, M.R.C.S., L.R.C.P., Penzance, to Joan M. Lucy Perry-Gore, Oxford.

DEATHS

BEATSON.—On Feb. 16th, at Woodside-crescent, Glasgow, Sir George Thomas Beatson, K.C.B., K.B.E., M.D., D.L., in his 85th year.

BENHAM.—On Feb. 14th, 1933, of pneumonia, Harold Walter Benham, M.B., M.R.C.P. Lond., second son of the late Dr. C. H. Benham and Mrs. A. Benham, 88, The Ridgeway, N.W.11, aged 24 years.

CORBOULD.—On Feb. 15th, at Coleherne-court, S.W., Victor Albert Louis Edward Corbould, M.D., M.R.C.S., L.R.C.P.

CURRIE.—On Feb. 19th, at Oxford-terrace, W., after a very short illness, Andrew Stark Currie, M.D.

ELLIOTT.—On Feb. 14th, at Osborne-road, Clifton, Bristol, Christopher Elliott, M.D., in his 84th year.

HYSLOP.—On Feb. 12th, at a nursing home in London, after a long illness, Theophilus Bulkeley Hyslop, M.D., C.M., M.R.C.P. Edin., F.R.S.E., late of Portland-place, W., and formerly medical superintendent of Royal Bethlem Hospital.

SMITH.—On Feb. 16th, suddenly, of heart failure, at Kilburn Park-road, N.W., Robert Montgomery Travers Smith, M.D., in his 76th year.

THATCHER.—On Feb. 13th, at N Charles Henry Thatcher,

WHITE-HOPKINS.—On Feb. 12th, at Regina Hotel, Nice, Major J. White-Hopkins, late R.A.M.C., aged 81.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

should be as painless as possible, lest the constant apprehension and anticipation further undermine the general health. Needles should not be inserted without anæsthetising the track with novocain. Aspiration of a large effusion without replacing the fluid by air is productive of pain, and this is the least of the risks to which the patient is exposed.

A small, recent effusion associated with little change in the lungs or pleural membranes is easily withdrawn. When an effusion has produced collapse of a lung, possibly extensively fibrosed, has caused a considerable displacement of the mediastinum, and led to a general thickening of the pleura, it is not possible to aspirate that fluid with impunity in a short space of time. The thickened membranes cannot stretch, and pain will result from the drag on the adhesions; the lung cannot re-expand to its old volume, and existing cavities will therefore be reopened; the mediastinum, previously pushed across to the opposite side, will be dragged over to the affected side; the contralateral lung will be forced to expand beyond its normal. A distressing cough, considerable pain, and possibly copious frothy sputum are the consequences of such an effort. In some cases, even, œdema and death may ensue. By replacing, by air or oxygen, part of the fluid as it is withdrawn these symptoms are all avoided. The effect of this replacement is to enable the maximum traction force to be applied on the lung and mediastinum which can be tolerated with comfort and safety. At the same time it is possible to aspirate as much of the fluid as is considered desirable. When the effusion conceals a malignant growth in the lower lobe, the advantage of being able to empty the pleural cavity of the fluid is obvious.

It is sometimes possible to disinfect an effusion which is loaded with tubercle bacilli, by injecting, after the aspiration, 5 or 10 c.cm. of a 2 per cent. solution of methylene-blue in absolute alcohol. If this fails, the effusion should be replaced by olive oil containing 5 per cent. oil of gomenol. This will be referred to later when considering oleothorax.

Airtight syphon drainage is indicated for those cases of tuberculous empyema in which the pus is too thick for aspiration, and in which a thoracoplasty is proposed; it is also indicated when there is considerable persistent toxæmia despite treatment as indicated above, and especially when there is a mixed infection.

We have already seen that with simple effusions the most important consideration is the effect of the fluid on the mediastinum; that with tuberculous pleurisies, the importance of the mediastinum has in no way faded, but a new factor has arisen, and the toxæmia may occasionally assume prime importance and necessitate intervention on its own account. When the empyema is a pyogenic one, the infection and the dangers associated with the mediastinum are of almost equally great importance, and disaster is likely to result if the fullest consideration is not given to both of them.

Empyema

The old line of treatment by thoracotomy in every case of empyema was associated with a heavy mortality. In streptococcal cases it was about 25 per cent., but during the influenza epidemic of 1917–18 it rose in some places in America to as high as 70 per cent. This led to the Empyema Commission being set up in America. As a result of their work and of that of Evarts Graham, a true appreciation of the physiology of the open pneumothorax was obtained. The immense value of this is shown by the drop in the mortality in cases of streptococcal empyema to 4·3 per cent.

If a large opening is made in the chest wall there are, in the absence of adhesions, certain inevitable changes. There is the collapse of the lung, which, except that it occurs suddenly, is, in itself, the least serious of the effects. The collapse of the lung is due to the substitution of the negative pressure, to which the lung is usually subject, by an atmospheric pressure. As the mediastinum is mobile, this yields to the pull of the negative pressure of the contralateral side, and to the force of the atmospheric pressure on the surface of the lung on the affected side. The displacement continues until the pressure in the contralateral hemithorax is approximately the same as that on the side of the open pneumothorax. In other words, the pressure in both sides of the chest becomes approximately equal, except at the height of inspiration. In order to get any air into the lung on the sound side, a very forceful inspiratory effort has to be made, since it is only at the height of inspiration that there is a negative pressure, and therefore a suction power capable of drawing air from the trachea into the lung.

During inspiration air will enter the lung through the glottis and trachea, and into the pleural cavity through the opening in the chest wall. Should the opening through the glottis be the larger a greater volume of air will be drawn into the lungs than through the opening into the pleural cavity. But if the pneumothorax opening is definitely larger than the glottis, the reverse is the case. The effort necessary for the increased inspiratory respirations is considerable. It is natural that the more seriously ill the patient, the greater the strain of the effort and the less the endurance capacity.

During expiration there is a partial expansion of the lung on the side of the open pneumothorax. The air which inflates this lung comes from the opposite lung, being driven out of it by the forceful expiratory action. During the inspiratory phase this air is drawn back again into the sound lung. This pendulum flow of air is immediately deprived of all its oxygen and is therefore valueless, and it occupies space, already greatly limited, which should be filled by air from the trachea.

There is furthermore a to-and-fro flapping of the mediastinum with each respiratory phase; inspiration draws it to the sound side while expiration forces it away again. This constant to-and-fro action causes serious cardiac embarrassment. Other difficulties are the loss of aspiration of the venous blood by the heart, leading to a venous stasis, and a loss of heat from the exposed pleural cavity. These dangers diminish and may almost cease to exist in proportion as the mediastinum is fixed by thickening of the pleural membranes, by the deposit of cellular debris and lymph, and by the formation of adhesions.

DIFFERENCE BETWEEN PNEUMOCOCCAL AND STREPTOCOCCAL EMPYEMA

The essential difference between a thoracotomy done for a streptococcal and a pneumococcal empyema in the earlier stages is that with a streptococcal infection it takes a considerable time for the mediastinum to become immobilised and, until that happens, thoracotomy means exposing a patient to all the dangers of an open pneumothorax. With a pneumococcal empyema, on the other hand, early fixation of the mediastinum is the rule.

A pneumonic empyema is a “meta-pneumonic” manifestation. That means to say that the pneumonic consolidation is usually over before the empyema is diagnosed. By this time resolution is taking place, for aeration. This herniation may occur with a negative as well as with a positive intrapleural pressure.

In the presence of an effusion there is yet another mechanical difficulty which will be encountered. This is the deposit of the cellular and fibrinous content of the fluid on the diaphragmatic pleura and into the phrenico-costal sinus. This becomes organised, fixing the diaphragm, the base of the lung, and the lower part of the chest. It is also responsible for the formation of adhesions between the pericardium and the base of the lung, which interfere with the free action of the heart, causing dyspnœa, tachycardia, and an irregular pulse. The deposit on and the irritation of the parietal pleura cause gradual thickening of the membrane and impede the re-expansion of the lung, should that later be required.

When trauma or disease is responsible for a spontaneous pneumothorax, or an effusion in the pleural cavity, the most frequent indication for surgical intervention is the mechanical disturbance produced by either of these complications; intervention is much more rarely necessitated by infection. In other words, when dealing with a pneumothorax a serous effusion, or with the great majority of tuberculous effusions, the only indication for active treatment is the excessive displacement of the mediastinum. When intervention is necessary on account of empyema, one of the most important considerations regulating modern treatment is again the mediastinum.

Spontaneous Pneumothorax

The dangers of a spontaneous pneumothorax are embarrassment of respiration and infection. This latter is surprisingly rare. Embarrassment of respiration depends on the freedom of the lungs from adhesions, and on the size and character of the opening in the lung. Adhesions preventing the collapse of the lung limit the extent of the pneumothorax and prevent excessive displacement of the mediastinum and so of collapse of the opposite lung. This advantage is sometimes offset by the adhesion dragging on one side of the lung-opening and preventing it from closing. When this condition persists it is necessary to divide the adhesion.

In the absence of adhesions the pneumothorax results in progressive collapse of the lung. This is usually sufficient to occlude the opening, which then becomes sealed by lymph. Before, however, the opening is closed the pressure may have risen sufficiently to distress the patient owing to the displacement of the mediastinum and its consequent influence on the contralateral lung, thereby curtailing the respiratory capacity. It is occasionally only that the resultant dyspnœa is sufficient to necessitate aspiration of some of the air. Should this be advisable, however, only sufficient air must be aspirated to make the patient comfortable. The positive intrapleural pressure is reduced, but not converted to a negative pressure lest the tear in the lung be reopened.

The spontaneous pneumothorax with a valve-like opening which allows the escape of air from the lung into the pleural cavity but not in the reverse direction is an urgent menace to life. Death from suffocation may be a matter of minutes only. There may be no time for refinements in technique. The largest available needle must be thrust through an intercostal space into the pleural cavity. A hypodermic injection of morphine gr. ¼ can then be given. This will ward off the imminent danger and allow time for the insertion with all aseptic precautions of a needle connected with a pneumothorax apparatus. Air can now be drawn off and the intrapleural pressure controlled. It occasionally happens that the necessity for aspiration is constantly recurring, or that the opening having apparently closed reopens. It is then necessary to introduce a catheter into the pleural cavity and to institute air-tight drainage.† This has many advantages. Provided the catheter is securely fixed the patient can be left with safety, as the intrapleural pressure is automatically regulated. Every forceful expulsion of air into the pleural cavity escapes immediately; should an effusion develop this is drained; at the same time it permits of a slight negative pressure being kept in the pleural cavity, which helps the re-expansion of the lung. The disadvantage is that the lymph which will form and which is so desirable, as it is this which seals the lung opening, will clog the catheter from time to time. It is, however, possible to clear the catheter with a stilette or, alternatively, to change it.

Pleural Effusions

All non-progressive effusions should be left alone unless there is a definite reason for intervening. An exploratory puncture with a syringe and fine needle should always be made to confirm the presence of fluid, if in doubt, and to ascertain the character of it. This can be repeated with impunity as necessary. There are three indications for the removal of the fluid. The most frequent and the most important is the appearance of dyspnœa and tachycardia due to excessive displacement of the mediastinum. A second and later indication is the persistence of pyrexia due to absorption of toxins, almost certain evidence that the effusion is an acute tuberculous one or is infected with pyogenic organisms. The third indication is when, after two or three weeks, the effusion is still undiminished in size. It is often found that absorption can be started and will continue satisfactorily once the intrapleural pressure is reduced by aspirating a part of the fluid.

The reason why delayed absorption is an indication for aspiration is that most effusions have some cellular or fibrinous content which is deposited in the dependent parts of the thorax. Becoming organised it produces thickening of the membranes, and will eventually interfere with the re-expansion of the lung and produce adhesions between the pericardium, diaphragm, and lung.

When dealing with tuberculous effusions there is an additional reason against repeated aspirations. Such an effusion is at first usually clear with little solid content, but after two or three aspirations it becomes more opaque, due to an increase in cells and fibrin, and after a time may become so thick with fibrin that it cannot be withdrawn through an ordinary cannula unless predigested. A tuberculous empyema occurring in a case with unilateral disease, and which shows itself to be unresponsive to treatment by aspiration, should not be allowed to reach the state of chronicity with thick pus and with thickened rigid membranes. An extensive, multiple stage thoracoplasty should be done while the membranes are still capable of satisfactory collapse, and the patient's general health is yet sufficiently good to justify this major operation.

It is not justifiable to inflict unnecessary pain; it tends, among other things, to destroy the morale and the confidence of the patient. When repeated explorations or aspirations are necessary, the puncture necessary to decorticate the lung—that is, to strip its thickened visceral pleura off the surface of the lung, thus allowing it to re-expand. Such an extensive operation has to be done in stages. The apex is the part most difficult to occlude, and it is essential that complete obliteration be obtained in that area lest the success of the whole treatment be spoilt.

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† This will be described later.

Such is the seriousness of operations for chronic empyema that it behoves the physician to keep a constant watch in every case of recognised or possible pleural effusion, and, by repeated exploratory puncture, if need be, to ensure that at the earliest onset of pus the case is promptly and efficiently dealt with. It behoves the surgeon also to make certain that every available means to procure re-expansion of the lung and obliteration of the pleural space is secured, and to guard against reinfection and the presence of foreign bodies.

Suppuration in the Lung

Lung suppuration offers a variety of clinical pictures. At the one end of the scale there is the acute lung abscess which runs a rapidly progressive course to a fatal termination. At the other extreme there is bronchiectasis, which runs a slow, but usually a progressive course and tends also, in the end, to be fatal. Between these two there are many gradations; there is the less intense subacute abscess, the chronic abscess, abscess complicated by bronchiectasis, and bronchiectasis complicated by abscess. These last two vary in their origin and in the earlier stages of their development, but later produce a picture that is practically identical. The acute, subacute, and chronic abscesses are comparatively amenable to treatment, but abscess complicated by bronchiectasis and all varieties of bronchiectasis are most resistant because of the associated mechanical difficulties.

ABSCESS

An abscess starts as an acute or subacute inflammatory condition. There is a diffuse zone of change in the lung, consisting of a central focus of intense infection and a surrounding area of pneumonic change fading into normal lung tissue to form an irregular pus-containing cavity, which usually communicates and discharges through a bronchus. The change in the outer inflammatory zone varies with the intensity of the infection. In the acute case, no limiting barrier can be formed against the progressive spread of the disease, but in the subacute type a controlling barrier may become possible and the subacute abscess gradually merges into the chronic type. This, in turn, depending on the extent and character of the changes and the absence of active surgical treatment, may become complicated by bronchiectatic changes.

Treatment differs according to the character of the abscess, and, to a less extent, its position. Briefly stated, the surgical treatment most frequently applicable to the acute, subacute, and some forms of chronic abscess is pneumotomy and drainage. When abscess is complicated by bronchiectasis, treatment must be on the lines used for bronchiectasis, and not on those used for abscess. Surgical intervention is not indicated, however, until medical treatment has failed; but it should unquestionably not be postponed until the abscess has become chronic.

When a foreign body is suspected as the responsible factor, bronchoscopy and, if possible, the removal of the foreign body is a proceeding that should be undertaken with the minimum of delay. But in other cases in which the abscess is acute or subacute, medical treatment should be given a trial for a period of six to eight weeks in the hope that, if drainage is efficient, the abscess will clear up without other intervention. This is more likely to happen when the lesion is in the upper lobe.

Should this fail, and in all cases of chronic abscess which, by the very fact that they have become chronic have shown themselves incapable of healing by bronchial drainage, bronchoscopy with aspiration of the pus should be tried. It is only when this also is unsuccessful that operation is indicated. In the case of an acute abscess, however, which is obviously progressing rapidly, and in cases in which the inflammatory processes are associated with gangrene of the lung, delay is not justifiable; the abscess should be opened and drained at the earliest possible moment.

OPERATION FOR LUNG ABSCESS

The first step, when surgical intervention has been decided on, is the localisation of the abscess by antero-posterior and lateral radiograms, preferably taken stereoscopically. Exploration with a needle is absolutely unjustifiable until the parietal pleura has been exposed and the visceral pleura is found to be adherent to it. If the abscess is located with the needle and the pleural cavity is patent, it is almost certain that an empyema will result.

It is for this same reason that it is impossible to decide beforehand whether the operation of pneumotomy can be done in one or two stages. More often than not the pleural membranes are not adherent, and secure adhesions must be produced before the abscess is sought for or opened.

No general anæsthetic is required; the operation can be done without distress to the patient under nembutal-morphine and local anæsthesia. As a general rule the most suitable access for an abscess in the upper lobe is over the first interspace and the second rib in front; for one in the middle lobe, in the anterior axillary line; whilst for an abscess in the lower lobe, in the posterior axillary line or below the angle of the scapula.

A musculo-cutaneous flap is turned off the area of approach It should be of sufficient size to give adequate access, bearing in mind that as the wound later granulates up, this opening will tend to close more rapidly than is convenient. A piece of rib, at least 7 cm. long, is excised, and also the intercostal muscles in the space above. The parietal pleura is exposed. If there are no adhesions, the underlying lung will be seen moving beneath the pleura. Under these circumstances the whole wound is packed with dry gauze and the flap sutured in place. When the abscess involves the apex, it is justifiable to strip the parietal pleura very gently away from the first rib, thus doing a partial apicolysis, and to pack the gauze under the first rib also. If, however, the membranes are thickened and apparently adherent, a small incision should be made cautiously through the parietal membranes to confirm the adherence of the lung. The second stage can then be proceeded with at once; otherwise not till ten days later.

When doing the second stage as a separate operation, nembutal and morphia should be given; a local anæsthetic is usually not necessary. After removal of the stitches, the wound is opened, the gauze is removed, and the cavity swabbed clean. It is now possible to explore with a needle and syringe. When pus is found the syringe is removed from the needle without disturbing its position; the lung is incised with a knife or the cautery, and the abscess opened. The cavity must be explored with the finger and all subsidiary abscesses opened into the main one. A gauze plug moistened in saline is packed firmly into the abscess cavity, and the outer wound is plugged with gauze which has been well covered with warm vaseline to prevent it adhering to the surrounding tissues. In the subsequent treatment, the outer wound must be kept well open until the abscess cavity has become obliterated by granulation tissue.

Should the abscess not be found, a free incision is made into the lung in the hope that the abscess will find its way out through this area. Failing this, lipiodol is introduced into the depths of the lung wound and further X rays are taken from different angles.

the rate of metabolism is diminishing, and the vital capacity is increasing. A streptococcal empyema, on the other hand, is "syn-pneumonic," developing with the very onset of the pneumonia. These two empyemas differ, moreover, in the character of their pus. The pus in a pneumococcic case is rich in fibrin from the start, and forms a deposit which thickens the pleural membranes and fixes the lung and mediastinum. The hæmolytic streptococcal case is very different. At first the effusion is a brown, turbid fluid, producing little deposit and unable, therefore, to immobilise the mediastinum. Frank pus does not appear till after two or three weeks.

Early thoracotomy and drainage is not particularly dangerous in a pneumococcal empyema, but it is intensely dangerous in the streptococcal case. Yet treatment is urgent, partly because of the acute toxæmia which demands immediate evacuation of the pus, and partly because of the symptoms caused by pressure on and displacement of the mediastinum.

The first step in every case of empyema is to ascertain by exploratory puncture the character of the effusion and the nature of the infection. If thick pneumococcal pus is found, thoracotomy and airtight drainage can be instituted, but if the empyema is due to a hæmolytic streptococcus, unless diagnosis has been long delayed and frank pus is present, thoracotomy is absolutely contraindicated, but other steps must be taken immediately to evacuate the fluid.

ASPIRATION AND AIRTIGHT DRAINAGE

The two essential principles in treatment, the removal of the fluid responsible for the profound toxæmia and the release of the pressure displacing the mediastinum and compressing the opposite lung, can both be carried out effectively by aspiration with replacement by oxygen or air. The difficulty is that the relief of symptoms is a temporary one only, and the process must be repeated every two or three days, as indicated by the return of pyrexia and the recurrence of symptoms of respiratory and cardiac embarrassment. Very occasionally, both in cases of streptococcal and pneumococcal empyemas, patients have been cured by aspiration alone.

Once pus has formed and has had time to cause a deposit which thickens the pleura, aspiration can be abandoned for thoracotomy. Even then, however, it is not wise to resect a rib and to institute open drainage. Syphon or suction drainage through an airtight opening is in most cases sufficient to evacuate the pus and re-expand the lung. In the earlier stages lavage is not indicated but may be after the acute phase has passed off. Lavage with Carrel Dakin's solution is necessary in certain cases where the deposit is so think that re-expansion of the lung is difficult. Carrel Dakin's solution has a solvent action on the fibrin in addition to its antiseptic value.

The great advantage about airtight drainage is the comparative simplicity of the operation. Two precautions are necessary. It is important to be sure that the catheter and the cannula are the same size, so that when the cannula has been withdrawn the catheter fits tightly in the tissues. It is advisable to mark the catheter at a point 3 inches from the end, before insertion, as a guide to the length projecting inside the pleural cavity. The catheter will become loose in the course of the ensuing seven to ten days and cease to function efficiently. Another difficulty is that the opening may get constantly blocked by flakes of lymph. It may then be advisable to make a larger opening and to insert an open drainage-tube. By this time all danger from an open pneumothorax will have ceased to exist, and the patient should be in a better general condition to tolerate the more extensive operation. The pull on the lung exerted through the airtight drainage will now be lost; as soon, therefore, as the patient is in a fit state, blowing exercises must be instituted. The greatest care will have to be taken during the dressings to guard against the risks of reinfection. The importance of the care for the patient's general condition must not be overlooked. Plenty of glucose and large draughts of water are essential.

For patients who are delirious and children who are restless or difficult to control, airtight drainage is not advisable owing to the danger that the catheter may be pulled out of the wound. For them it is wiser to continue with aspiration and replacement until it is safer to do a thoracotomy and open drainage.

The choice between thoracotomy through an intercostal space or by rib resection depends very much on the case. The intercostal operation is the simpler and needs a less extensive infiltration with the analgesia. It is not, however, satisfactory when the ribs are in close apposition; it limits the size of the drainage-tube, and there is a risk that the pressure of the tube will produce rib necrosis. There is also the risk of rib necrosis from infection when rib resection is done. This can be guarded against by plugging the cut ends of the bone with paraffin wax.

CHRONIC EMPYEMA

A very large percentage of all cases of chronic empyema are due to the following preventable causes. There is delay in diagnosis until the organisation changes in the deposited lymph have rendered the pleura so rigid that the lung cannot re-expand nor the mediastinum return to its normal position. There is omission to use Carrel Dakin's solution when its solvent action might yet free the pleura of deposited but still imperfectly organised lymph. There is inefficient or wrongly placed drainage. There is reinfection, due most often to the discharge of the patient before the lung is fully expanded and the wound healed. There is the presence of a foreign body due to a drainage-tube lost in the cavity, to fragments of rib, or to osteomyelitis of the rib. A chronic sinus may be due to the drainage-tube being left in too long.

Chronic empyema may also be due to unavoidable causes, such as a persistent pleuro-bronchial fistula, or to disease of the pleural membrane, whether tuberculous or actinomycotic.

The first step in the treatment of a chronic empyema, having ascertained its extent, is to secure efficient, dependent drainage and to irrigate the cavity repeatedly with Carrel Dakin's solution, so as to disinfect the cavity and to strip the pleural membranes of all possible organising lymph. The use of this solution will be impossible if there is a fistula. Blowing exercises are carried out at the same time to encourage expansion of the lung.

The character of the subsequent operation will depend on the extent of the empyema cavity. A small one may be obliterated by removing all the overlying and adjacent ribs. A large cavity, but one in which the lung is not fully collapsed, will need an extensive decostalisation and, in addition, the removal of the overlying thickened parietal pleura, together with the periosteum of the ribs and the intercostal muscles. A cavity with a fully collapsed lung will require additional measures to ensure approximation of the outer and inner walls. To this end it will be peritoneum running upwards and outwards from the convexity of the curve described by the spermatic vessels in the iliac fossa, but the pull is felt far above this and even the kidney moves with it. The peritoneum, of course, moves with the shifting of the structures underneath it, but it is far too flimsy and extensible to withstand the strain; the structure which is sought must lie beneath it. To show this structure a second incision is made.

This incision divides the entire muscular abdominal wall from the lumbocostal angle to the scrotum, opening that line of cleavage which lies directly beneath the muscles and which the surgeon uses for the "extraperitoneal" approach to the ureter or iliac vessels. Dissection is carried on in this interspace over the entire side of the abdomen, leaving the muscles on the outer side of the cleft and the spermatic vessels, the ureter, and the kidney on the inner.

The cord is now freed from the opened inguinal canal, and at the point where it joins the main mass of abdominal contents the peritoneum is exposed by pulling the spermatic vessels and their accompanying tissues away from it. The true peritoneum is a membrane hardly thicker than a soap-bubble, but it is possible to carry a second splitting dissection between it and the tissues to its outer side over much the same extent as the first one.

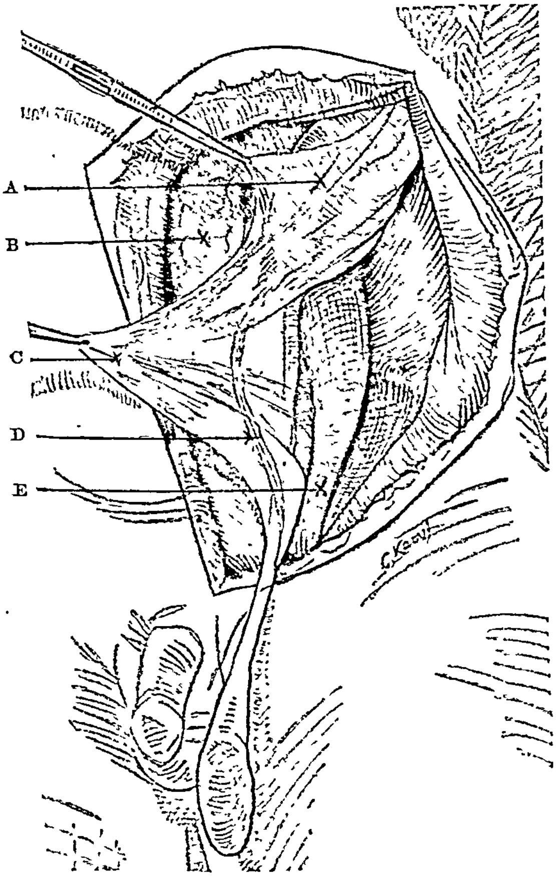

FIG. 1.—Dissection showing the layer of tissue in which the spermatic vessels run, isolated between the peritoneum on the inner side, and the muscle-sheaths of the abdominal wall on the outer. A fan-shaped prolongation of its fibres can be seen running down with the cord towards the testis, which has been pulled out of the scrotum. A = Kidney in its fibrous sheath. B = Peritoneum covering intestines. C = "Abdominal connective tissue." D = Spermatic vessels. E = Psoas muscle.

The final result is the isolation, between the two planes of dissection, of a layer of fibrous tissue which is apparently continuous around the whole extent of the abdominal cavity (Fig. 1). Above it becomes thick and fatty to ensheathe the kidney; below this the ureter and the spermatic vessels run in its substance; and at the internal ring a prolongation of its fibres accompanies the spermatic vessels through the inguinal canal down to the testis. It is this prolongation whose fan-shaped upper end was demonstrated through the intact peritoneum by pulling upon the cord, and which normally takes the weight of the testis off the vessels and the vas when the suspensory muscles relax.

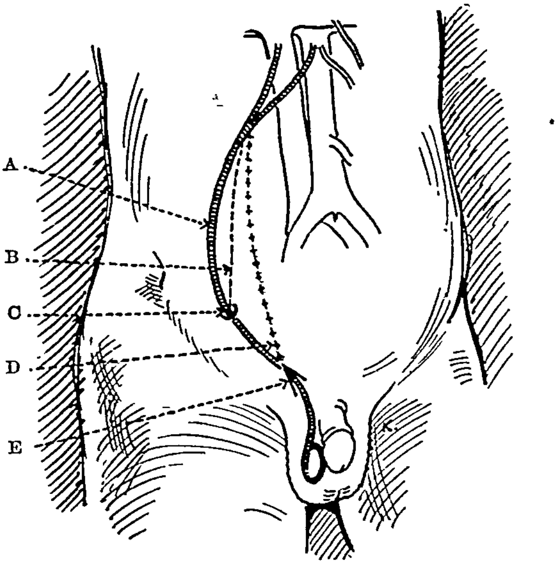

FIG. 2.—Diagram showing the three stages in lowering the testis. A = Normal course of spermatic vessels. B = Course of vessels after freeing them from abdominal connective tissue. C = Internal abdominal ring. D = Course of vessels after division of internal crus of internal ring. E = External abdominal ring.

The practical object of these investigations is to find out how to lower a testis as far as possible without destroying either of its two indispensable connexions with the body, the vas and the spermatic vessels. Obviously the next step is to divide the fibrous suspension that has been demonstrated and to observe the result. When this has been done and the spermatic vessels have been freed they straighten out both in their main curve and in those minor irregularities which they possess in common with all blood-vessels, so permitting a marked lowering of the testis. This straightening, however, makes the vessels meet the inguinal canal at a distinct angle of about 45°, instead of curving gently into it as they did originally (Fig. 2). There is normally a sharp turn at this point in the course of the vas, and investigation, either by dragging hard on the cord or by feeling with the finger, will make it clear that there is some firm structure here which maintains an angle in the constituents of the cord, and consequently prevents the maximum descent of the testis which that cord suspends.

Whatever this structure is, besides maintaining this angle it must form the boundary between oblique and direct inguinal herniæ, it must be capable of taking its part in the strangulation of a hernia at the internal ring, and it must raise that fold in the peritoneum which is always to be seen just internal to the point at which the testis originally left the abdomen. In text-books, of

Pneumotomy, in order to reach a deep-seated abscess close to the hilum, carries the serious risks that large vessels may be opened, and possibly large bronchi also. The patient is then exposed to the dangers of hæmorrhage from the wound, which is difficult to control owing to the depth from the surface; of hæmoptysis when both vessel and bronchus are opened, or of air embolus. This is just the case for which artificial pneumothorax is permissible and often very effective. Collapse by artificial pneumothorax is dangerous when the abscess is close to the surface, since the pleural cavity is apt to become infected from a superficial abscess.

Pneumotomy is contraindicated also in cases in which abscess and bronchiectasis complicate each other, unless the abscess is considerable and the bronchiectasis a mild secondary change. Extensive collapse by thoracoplasty is indicated in all these cases which involve more than one lobe. For the unilobar lesion, whether bronchiectasis alone or complicated by abscess, resection of the lobe is the operation of choice, despite the considerable mortality.

BRONCHIECTASIS

Bronchiectasis is a dilatation and thickening of the bronchi which, once it has developed, cannot be healed in the way that changes and even destruction caused by other inflammatory diseases can be healed. It is for this reason that the two great difficulties in the treatment of bronchiectasis are that the collapse of the dilated tubes must be complete and must be permanent.

Lobectomy, which eradicates the disease, is applicable to the unilobar lesion only. It is a difficult operation, and under the most favourable conditions has a mortality of 15 per cent. Lobectomy of more than one lobe has been done, but the mortality in these cases reaches 70 per cent. For the unilateral cases one or other method of collapse therapy offers some hope of improvement and even of success.

When a complete collapse of the lung can be obtained by artificial pneumothorax the immediate result is excellent, but the collapse of the lung must be maintained continuously else the symptoms will return. The substitution of the air by oil, once the collapse has been established, lessens very considerably the interval between the refills. Unless, however, the mediastinum is mobile, or a pocket of air is kept constantly above the oil, there are dangers associated with an oleothorax which may lead to serious complications. Hemidiaphragmatic paralysis is occasionally only successful in basal cases. When there is a bilateral basal bronchiectasis a bilateral phrenicectomy should be done, as considerable improvement may result.

Thoracoplasty has the advantage of producing a permanent collapse, but the collapse is not as complete as that obtained by artificial pneumothorax. The results depend on the type of bronchiectasis. If the dilatation involves the main tubes little benefit will follow a thoracoplasty, but if the smaller bronchi and bronchioles are the seat of the trouble, complete or almost complete abolition of the symptoms may result from the operation. When a thoracoplasty is done for bronchiectasis the amount of rib resected must be greater than is usual for a case of tuberculosis. It may also be necessary to supplement the posterior resection by an excision of the costal cartilages from the first down to and including the costal margin. If the supplementary collapse is needed over a localised area only, this may be effected by a further local rib resection or by a paraffin pneumolysis.

SOME ANATOMICAL POINTS IN THE OPERATION FOR UNDESCENDED TESTICLE

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> "And rouse from sleep that fell anatomy."
> —King John, Act III., scene 4.

It is a useful platitude that the first step in trying to correct some congenital abnormality of the body is to define the normal structure and mechanics of the part concerned. In the surgical treatment of undescended testis therefore, before trying to shift the misplaced organ into its normal position, it is reasonable to investigate how exactly this normal position is maintained.

The suspension of the testis, like a weight at the end of a rope, is unique in the mechanics of the body, and it is not extremely obvious upon what structures the pull of gravity falls. The skin can be at once eliminated from any share in opposing this pull. Its behaviour in obesity, in large herniæ, or in the lips which certain African tribes stretch to the size of saucers, shows that it yields almost indefinitely to any persistent force, however small. To turn from analogy to experiment, it will be found that it is impossible to drag the normal testis downwards far enough to put a strain on the skin of the scrotum.

The dartos and cremaster muscles have of course a suspensory action; when they contract the testis is raised. But muscles are only fitted to exert force intermittently, and the body invariably backs them up by some arrangement of fibrous tissue to supply a passive but permanent safeguard when there is any danger of displacement of structure. A good instance of this is the relation of muscles and ligaments around joints.

The probability is then, that there is a secondary fibrous suspension of the testis. To counteract the force of gravity its direction must be straight up and down, and so it must run with the spermatic vessels and the vas, which lead directly downwards to the organ. These structures can be ruled out as being themselves the weight-bearers by virtue of another of the fundamental principles of the body: the principle that to one structure there shall be one function alone. (It is a rule whose wisdom the human inventor has usually to find out for himself; the combination tin-opener and mouse-trap is rarely a success.) The slackness and tortuosity of the blood-vessels, which enables them to convey fluid through all changes of pressure and position, completely unfit them for resisting tension. The same applies to the vas, which has many points of resemblance to an artery.

DISSECTION OF THE SUSPENSION OF THE TESTIS

To find out whether there actually exists the structure which has been deduced from the combination of the habits of the body and the mechanics of the problem, two incisions are needed. The first is an ordinary midline one that opens the peritoneal cavity and lays bare its posterior wall. Then, when the action of gravity is imitated and exaggerated by dragging downwards on the testis, it is seen that the strain of this drag passes up along the cord past the internal ring, to radiate over the exposed posterior abdominal wall. The main stress comes on fibres which can be seen and felt beneath the

This opinion is less startling than it looks, as it is held, though without any exact formulation of it, by almost every surgeon. The "peritoneum" sewn up in any abdominal operation contains the three layers of the anatomist welded to the endothelial lining of the abdominal cavity, but no surgeon ever refers to these layers as separate entities.

My own belief in the infallibility of the present systematic anatomy departed permanently after my investigations on the tonsil, an anæmic scrap of lymphoid tissue upon which the classical account concentrates some half a dozen arteries. But to anyone who doubts the possibility of gross misdescriptions being copied from one anatomy book to another, I would recommend consideration of the state of mind shown by the use of one term in the name of the structure under discussion, the word "fascia." The first essential in the scientific description of any subject is a narrow and sharply defined meaning to any terms that are used. In spite of this structures which are different developmentally, morphologically, and functionally are all lumped together under this one heading. Consider the absurdity of using the same term for a tendon like the fascia lata, and for a vague concentration of fibrous tissue like the fascia of Camper. Or why should the expansion of the tendon of the palmaris longus in the palm be an aponeurosis, and the precisely similar expansion of the hamstrings in the leg be fascia ? This confusion is at its maximum in the pelvis, where the muscle sheaths and tendons on the one side and the packing material between the viscera on the other, are described as the visceral and parietal layers of the same fascia. I feel diffident about attacking the mystery of the pelvic fascia. What student has not been reduced to a wholesome state of modesty by his complete failure to understand it ? What professor of anatomy is not rumoured to be writing a book upon it ? And yet I must confess that I believe the whole doctrine, like certain ones of the early Alexandrian theologians, to be founded upon the double meaning of a single word.

The difficulty of identifying the fibrous suspension of the testis with the internal spermatic fascia is paralleled by the difficulty of finding an exact anatomical name for the condensation of fibres which has been described at the upper end of the inguinal canal. It is, of course, the band which Hesselbach[4] described as the internal crus of the internal abdominal ring. In his drawings he shows with great clearness that it is this structure, and not the deep epigastric vessels, which actually forms the inner border of the gap through which an indirect hernia emerges. But I cannot see it as he draws it, directly continuous with the sheath of the rectus. It is quite different in texture from the tissues that transmit muscular force, and a strong argument against this band belonging to the muscular system is that the contraction of the abdominal muscles must slacken it by bringing the arch of the conjoint tendon near to Poupart's ligament; fibrous tissue which really belongs to muscles only serves the purpose of applying the force of the contractions, which invariably tighten it.

To me this band appears to be a typical condensation of the extraperitoneal fibrous tissue which may possibly have been originally produced by the emergence of the testis. If one imagines a loose fabric lining the abdominal cavity, the thrusting through it of a finger at the internal ring in the direction of the inguinal canal would produce just such concentration of fibres at this point. However, this is an unimportant speculation.

The "interfoveolar ligament," which is described in some books as crossing the floor of the inguinal canal between the sites of direct and indirect herniæ, appears to consist of aberrant strands of muscle which not infrequently stray from the transversalis in this region. Quain[5] shows it as superficial to the tissues bounding the internal ring and flooring the inguinal canal, but adds to the confusion by showing these tissues as continuous with the sheath of the transversalis and calling them the "iliopubic tract."

Most of the modern text-books simply describe the floor of the inguinal canal as being formed of transversalis fascia and let it go at that. It may be noted that though it is always stated that the cord carries with it prolongations of each of the layers of the abdominal wall, the extraperitoneal tissue and the fibrous layer of the peritoneum are never mentioned in the catalogue of these.

SUGGESTIONS FOR A DESCRIPTION OF THE FIBROUS TISSUE OF THE ABDOMEN

As a target for retaliatory criticism I offer the outline of a description of the abdomen in which a layer, "the abdominal connective tissue," is described as forming a complete investment for the abdominal contents, between the osteomuscular box on the outer side and the peritoneal sac on the inner. Only

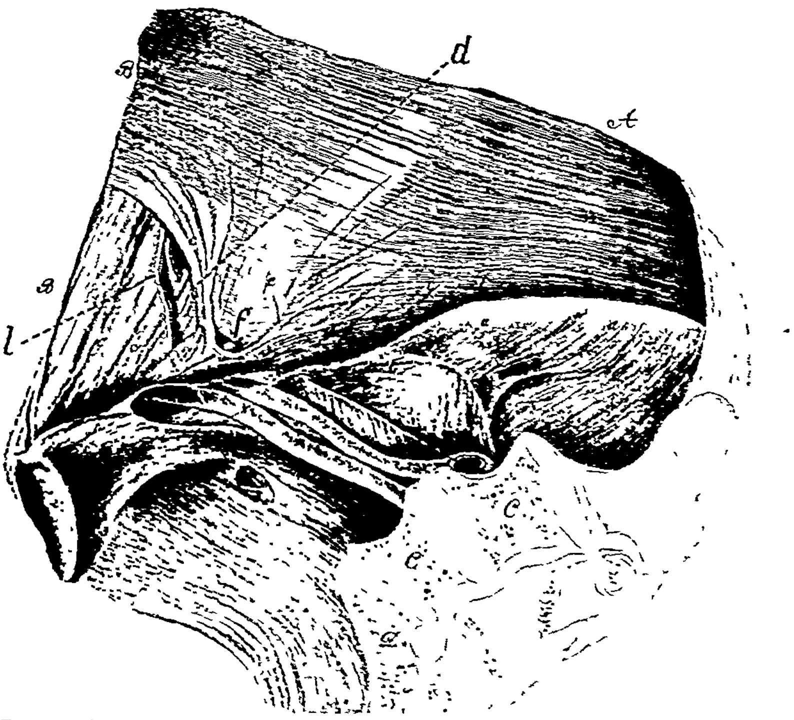

FIG. 4.—One of Hesselbach's original drawings, showing that it is the band of fibres which he calls the internal crus, and not the deep epigastric vessels, which bounds the internal abdominal ring. *d* = Internal crus of internal abdominal ring. *l* = Deep epigastric vein. *f* = Internal abdominal ring.

course, the dividing structure between direct and indirect herniæ is always described as the deep epigastric vessels, but it has been already pointed out that unsupported blood-vessels have not the tenseness and rigidity which would enable them to act in this way. Once again fibrous tissue should be expected, and *once again* it is found as an irregular but extremely tough band which defines the median half of the internal abdominal ring. Its fibres are usually arranged as several sharp-edged crescentic folds, blending behind with the sheath of the iliac vessels and in front with the general extraperitoneal fibrous tissue. In its shelter run the deep epigastric vessels, and once it has been divided it will be found that these vessels are so slack that they can be moved with ease downwards and inwards to the level of the external ring. This allows the complete straightening of the spermatic vessels, and as in almost all cases this straightening still leaves a definite amount of slack in the vas, nothing further can be done to allow the testis to descend.

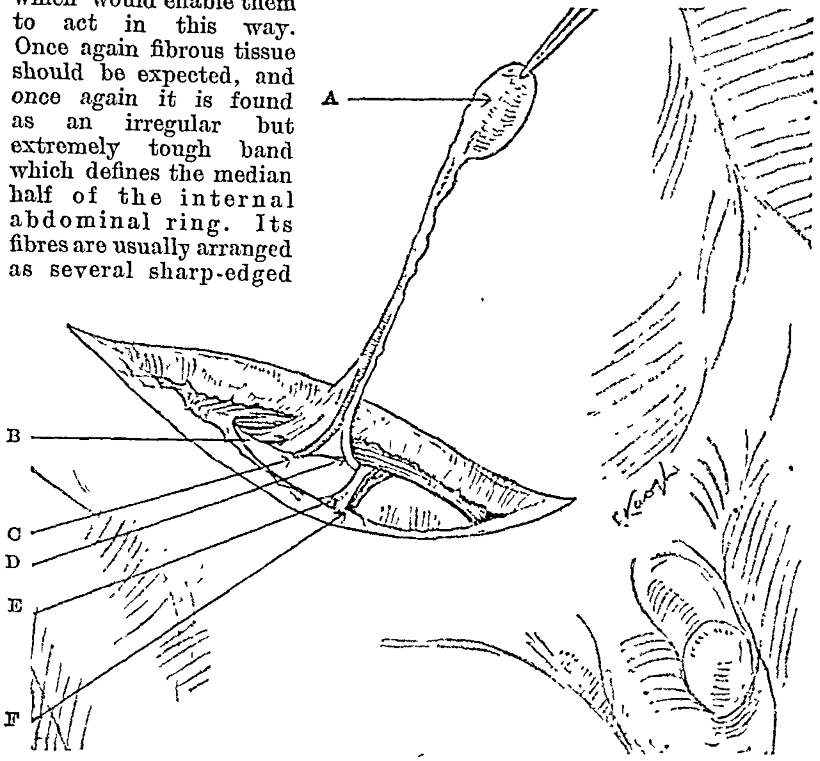

FIG. 3.—Drawing of an operation, showing a fan-shaped band of fibres spreading outwards and upwards from the spermatic vessels at the internal inguinal ring. The vas is seen turning at a sharp angle to join the cord, this angle being maintained by the fibrous internal crus of the internal ring. The deep epigastric vessels are running in the shelter of the internal crus, and take no part in bounding the ring. A = The testis. B = Fan-shaped expansion of suspensory fibres. C = Spermatic vessels. D = Vas deferens. E = Edge of internal crus of internal abdominal ring. F = Deep epigastric vessels.

SURGICAL IMPORTANCE OF THE STRUCTURES DESCRIBED

In the operation for undescended testicle the suspensory fibres must be deliberately and delicately isolated where they spread out in a fan shape from the spermatic vessels at the internal ring (Fig. 3). This fan can be felt running upwards free between the peritoneum on the inner side and the muscles on the outer; the veins are carefully defined on its inner edge, and it is divided piecemeal.

The final step in lowering the testis is a similar cautious division of the band which maintains the angle of the vas and the spermatic vessels at the internal ring. As has been already stated, when this is done the deep epigastric vessels are no obstacle to the complete shifting inwards of the cord, and consequently there is no need to divide them as Davison[1] recommends.

In the radical cure of an inguinal hernia, again, one of the main points in avoiding recurrence is to obliterate completely any dimple at the site of the original neck of the sac. In consequence the band which defines the inner edge of both the neck of the sac and of any dimple which may remain after the sac's removal is probably worthy of more attention than it usually receives.

There is also some surgical interest in the possible importance of the suspensory fibres in the production of varicocele. If the primary muscular suspension is put out of action for long periods, for instance by general debility or by residence in the tropics, the ensuing tension on the fibres must tighten them across the veins and so impede the return flow of blood. It is possible that an operation planned to relieve this might be more satisfactory than the present technique; it could scarcely be less so.

A CRITICISM OF THE DESCRIPTION OF THE FIBROUS TISSUE OF THE ABDOMEN

The interest of the fibrous bands described does not, however, end with their surgical division; they have still to be identified with structures in the systematic anatomy of the textbooks. These describe a funnel-shaped fibrous sheath to the elements of the cord, the infundibular fascia, as descending from the transversalis fascia. The transversalis fascia is described in its turn as an aponeurotic layer inserted below into the crest of the ilium and the outer third of Poupart's ligament, and continuous above with the fascia that surrounds the kidney.

I am not particularly concerned with the difference between the bundle of fibres running with the spermatic vessels which I have described, and the funnel-shaped infundibuliform fascia that encloses both vessels and vas. But the tissues into which the vessels and their accompanying fibres run lies over the iliacus, and so cannot be the transversalis fascia. And if it were the transversalis fascia, it has certainly no insertion into the iliac crest, though it does split above to enclose the kidney.

When I first met this difficulty I began to investigate the transversalis fascia. I sought it in books, where its descriptions were vague and unconvincing; in anatomy departments, which had no dissections of it to offer; and in the human body, where I failed entirely to find it. The only result of my search was a suspicion which hardened into a heresy. The orthodox teaching is that the layer between the filmy true peritoneum and the muscles of the abdominal wall, that layer whose isolation by dissection I have described, consists of three distinct structures: the fibrous layer of the peritoneum, the extraperitoneal connective tissues, and the transversalis fascia. My heresy is that these three are one and indivisible.

success obtained in the prolonged narcosis treatment of many cases of mental disorder has warranted a search either for new drugs which will produce sufficiently deep narcosis without the demonstration of toxic by-effects or for a modification of present methods of narcosis which will diminish or eliminate the toxic action.

The toxic effects of narcotic treatment, particularly by somnifaine, have been described by A. M. Meerloo [2] and M. Müller.[3] These include bulbar symptoms, such as derangements of swallowing mechanism, indistinct speech, ataxia, tremor of the lips, and vasomotor paralysis. A frequent accompaniment of prolonged narcosis is the development of ketonuria, which becomes more marked as the narcosis proceeds. The amount of ketonuria varies from person to person; in certain patients there is little or no ketonuria after seven days' narcosis under somnifaine, whereas in others the ketonuria may become very marked 48 hours or less from the commencement of the treatment. Doubtless the effect has much to do with the actual dosage of the narcotic, certain patients responding more vigorously than others, so far as ketosis is concerned, to a given dose. In the past it has always been considered advisable in this hospital to cut short treatment with somnifaine (the drug most frequently used) as soon as a definite ketosis has been produced. This has militated greatly against the success of narcotic treatment.

THE ACTION OF NARCOTICS

Investigations have been carried out recently in this laboratory on the mode of action of narcotics. The problem has been studied from a biochemical standpoint, the object being to discover what metabolic processes were influenced by the presence of the narcotic. The results,[4] briefly, are: (1) all narcotics have the property of inhibiting specifically, at low concentrations, the oxidation by the brain of substances important in carbohydrate metabolism—viz., glucose, lactic acid, and pyruvic acid; (2) of narcotics belonging to the same chemical type, those with the greater narcotic activity have the greater inhibitive action on brain oxidations. There is a definite parallelism between the inhibitive power on glucose oxidation of brain and the narcotic power of the drug.

It seems from the facts available that the narcotic is taken up from the blood stream at a nervous centre, where it effects a diminution of the power of the cells constituting the centre to oxidise glucose or lactic acid. The amount of energy available for the functional activity of these cells is thereby diminished and narcosis—or a depression of the functional activity of the nervous centre in question—ensues. These observations led to the supposition that narcotics may exert toxic effects in the animal organism by interfering with the carbohydrate metabolism of organs other than the brain, a view supported by experimental observations on liver oxidation in the presence of narcotics and by the fact that ketonuria is a frequent accompaniment of narcosis. It is remarkable that the development of ketosis which so frequently occurs in surgical anæsthesia has not been previously noted, to our knowledge, in prolonged narcosis.

AN EXPERIMENTAL INVESTIGATION

It was found from certain preliminary experiments that the simultaneous administration of glucose and insulin to narcotised animals brought about a decrease in toxicity of the narcotic, and this work led us to consider the possibility of administration of glucose and insulin to patients undergoing narcotic treatment.

So far, 20 patients have been investigated. The usual procedure has been to administer 2 c.cm. of somnifaine intramuscularly from two to four times in 24 hours, most patients receiving three doses a day. The urine was collected in the morning and afternoon, the morning specimen being always examined for acetone bodies. The Rothera nitroprusside test was used for the colorimetric demonstration of acetone, and in many cases acetone was estimated quantitatively.

As soon as definite ketonuria appeared the following modified procedure was adopted. Simultaneously with the next intramuscular injection of somnifaine 5 to 15 units of insulin were given hypodermically, this dose of insulin from then onwards being administered twice or thrice a day (with each subsequent dose of the narcotic). With each insulin injection the patient received (by the mouth) 50 g. of glucose in water or milk. Blood-sugar estimations were frequently made as a precautionary measure. The doses of glucose and insulin cited have been, in our experience, sufficient to avoid hypoglycæmia.

The immediate result of the insulin-glucose modification of the narcotic treatment was the entire disappearance of ketonuria within 48 hours. The patient, moreover, showed no ketonuria during the remainder of the course of the narcotic treatment, which lasted from 14 to 16 days. It is as yet too early to decide whether all other toxic symptoms disappear, but it has been noted, in particular, that cyanosis, alarming drowsiness, and vomiting are symptoms which either partially or completely disappear under the modified treatment. The accompanying Table shows typical examples of the effect of glucose-insulin treatment on the disappearance of ketosis during somnifaine narcosis.

Case.	Dosage of somnifaine throughout treatment.	Day of appearance of ketonuria after commencement of narcosis.	Acetone in urine mg. per 100 c.cm.	Day of first administration of insulin and glucose.	Acetone in urine mg. per 100 c.cm.
1	2 c.cm. t.i.d.	6th	12 (6th day); 31 (7th day).	7th	3 (8th day); nil (9th)*
2	2 c.cm. t.i.d.	7th	5 (7th day); 19 (8th day).	8th	Trace (9th day); nil (10th)*
3	2 c.cm. t.i.d.	4th	+ + + + + (4th day).	5th	Trace (6th day); nil (7th)*
4	2 c.cm. t.i.d.	1st	+ + (1st day).	2nd	Nil (3rd day)*

* and subsequent days of treatment.

In two cases glucose and insulin were given at the commencement of the course of treatment, and in neither of these cases has ketosis developed throughout the entire course. It seems probable that the most desirable procedure is to give glucose and insulin at the commencement of a course of narcotic treatment, in order to prevent the appearance of ketosis and other toxic symptoms.

Out of the 20 patients investigated, 13 have had glucose-insulin treatment, with the result that they when it is isolated in this way can the ordinary mind form a picture of a continuous "packing layer" that includes the transversalis fascia, the tela subserosa, the fibrous layer of the peritoneum, the visceral layer of the pelvic fascia, the kidney fascia, the extraperitoneal fat, and all the other indefinite terms which do so little credit to one of the exacter departments of medicine.

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[2] Meerloo (Zeits. f. d. ges. Neurol. u. Psychiat., 1930, cxxvii., 168) gives a detailed survey of the literature of narcosis treatment.

[3] Ibid., 1925, xcvi., 653.

[4] Quastel and Wheatley, A. H. M.: Proc. Roy. Soc., B, 1932, cxii., 60; Davies, D. R., and Quastel: Biochem. Jour., 1932, xxvi., 1672.

All the viscera can be described in relation to this layer, either sessile upon its inner surface like the liver, attached to it by a bridge of its substance like the alimentary canal, or buried in it like the kidney. Any structure that emerges from it, either during the development of the body or later, carries with it some of its tissues in prolongations of varying types, such as the fatty outer sheath of a femoral hernia, the dense fibrous sheath of the femoral vessels, or the suspension of the testis which is the subject of this paper (Fig. 5).

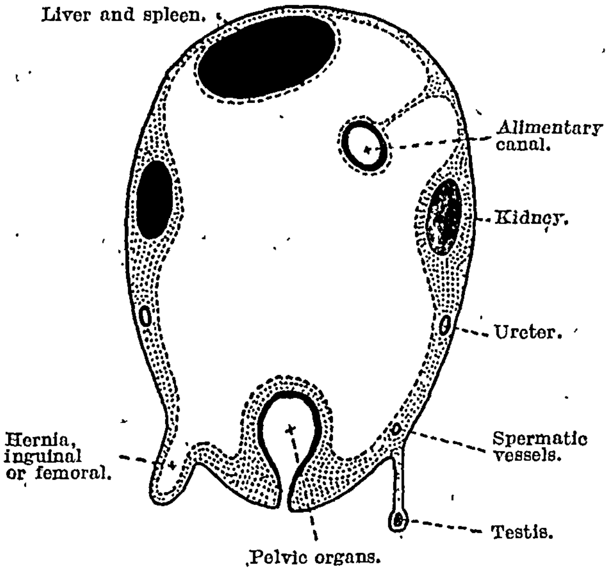

FIG. 5.—Diagram showing the arrangement and distribution of the "abdominal connective tissue," as a single layer of fat and fibres, in which the various viscera are packed between the peritoneum and the muscles, and which supplies a covering to anything that runs outwards through it.

This abdominal connective tissue varies greatly in different regions in its thickness, its shape, and in the proportions which its two elements, fibres and fat, bear to each other. As might be expected from its function as a packing layer, it is most abundant in the lower part of the abdomen into which the viscera sag and strongest round the openings (inguinal canal, anus, &c.) through which the viscera tend to escape. Wherever there is any strain the fibres of this layer concentrate and organise themselves to meet it, forming, as Lane pointed out, suspensory ligaments to take the weight of the various viscera. The two structures which have been described belong to this kind of concentration, and numerous other examples of it are well known.

It should be noted that the line of cleavage that the surgeon calls the "extraperitoneal approach" has this layer of tissue between it and the peritoneum. In consequence, if the ureter is sought by this route it is found embedded in the fibrous tissue on the inner wall of the cleft, a fact which is usually expressed by saying that "the ureter is adherent to the peritoneum."[2] It seems rather absurd to describe as extraperitoneal a line of cleavage that leads into the cave of Retzius in one direction and behind the kidney in the other; perhaps "submuscular" would be a better name.

The dissection which shows the abdominal connective tissue best is not possible in the systematic taking to pieces of the body, but it is an instructive and not particularly difficult way of doing a post-mortem examination of the abdomen. In it the muscles of the abdominal wall are divided by a cruciform incision reaching from loin to loin, and from the sternum to the pubis. The submuscular or "extraperitoneal" space is found below the muscles, and the whole abdomen is dissected in it. The œsophagus, the great vessels, and the structures emerging through the pelvic diaphragm are cut through as they are met; the testis is pulled up through the inguinal canal, and the final result is the removal of a sausage-shaped mass containing all the viscera. This mass contains the peritoneum and in many places consists of what is usually called peritoneum, but nowhere is the true membrane itself visible.

It appears to me that in this way it would be possible to offer to the student of anatomy a comprehensive yet comprehensible account of something of the utmost surgical importance—the fibrous tissue between the peritoneum and the osteomuscular wall of the entire abdominal cavity. If any professor of anatomy needs to be convinced of the utter confusion produced by the present teaching, I recommend the setting of a question on these lines at the next examination.

I owe many thanks to Mr. C. A. Keogh, F.R.C.S., for his help in the dissections and for his drawings to illustrate them.

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GLUCOSE-INSULIN ADMINISTRATION IN PROLONGED NARCOSIS

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The development of narcotic treatment in certain types of mental disease has been greatly retarded by the knowledge that prolonged narcosis for therapeutic purposes is often accompanied by toxic symptoms. These symptoms may be such as to render further treatment with the narcotic inadvisable or dangerous, and consequently the treatment has frequently to be stopped before there is any chance of an alleviation of the abnormal mental symptoms.

In the Cardiff City Mental Hospital about 50 cases have been treated with Somnifaine[1] during the past two years. The results were extremely encouraging except in so far as toxic symptoms, including the production of ketosis, were demonstrated in a large proportion of the cases. The toxic by-effects were often so alarming that it became necessary to discontinue the treatment. It has been felt, however, that the

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[1] Somnifaine is an alcohol-glycerol-aqueous solution of a mixture of diethylamine salts of 10 per cent. veronal and 10 per cent. allylisopropylbarbituric acid.

the same number of embryo filariæ in his blood, and they have maintained the same nocturnal periodicity. Apart from a hydrocele and an enlarged testicle, both probably filarial in nature, he has never developed or exhibited any further signs of filarial disease.

The number of embryo filariæ in his blood has been very considerable—about 260 to 20 c.mm. of blood at midnight—and as the patient has frequently been to the Hospital for Tropical Diseases and the Seamen's Hospital, Royal Albert Dock, for dysentery, venereal disease, and finally for pyloric stenosis, there have been ample opportunities for prolonged observations on his blood.

The observations on the nocturnal periodicity in this case were made at hourly intervals, and were carried out with meticulous care. Dry and wet films were prepared at the bedside and examined forthwith, and a standard quantity of 10 c.mm. was employed (which is half the amount of the 20 c.mm. which is commonly adopted). The main points brought out by Mr. Walters's graphs are these :—

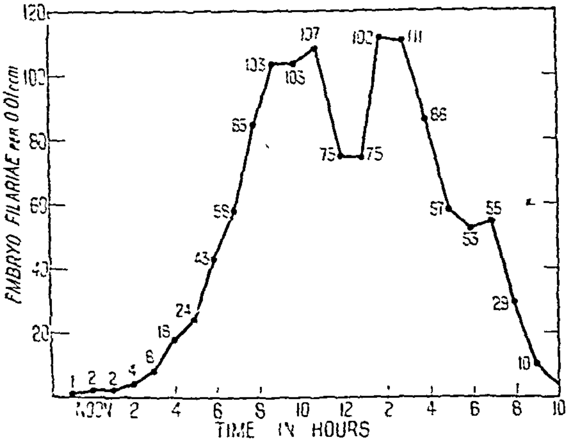

FIG. 2 shows the average number of embryo *F. bancrofti* per 0·01 c.cm. of a patient's blood during 24 consecutive hours of reversed life. The patient was given hyoscine gr. 1/100 and morphia gr. 1/48 at 10 A.M. on June 15th and put to bed in a darkened private room. 11 A.M.–3 P.M.: patient asleep. 4 P.M., awake; given a drink of water and luminal grs. 1. 5 P.M.–8 P.M., asleep. 9 P.M., dozing. 10 P.M., waking and irritable. 11 P.M., fully awake. 11.30 P.M., got up and had meal of tea, eggs, and toast. 12 P.M., out for a walk of 40 minutes in hospital grounds. 1 A.M., fully awake and chatting, feels quite well. 1.30 A.M., had meal of tea and toast; feels quite well. 2 A.M., lying quietly in bed, feeling drowsy. 3 A.M., dozing. 4 A.M., asleep. 5 A.M., awake and tired. 6 A.M., drowsy and slightly irritable. 7 A.M.–9 A.M., asleep but waking at any noise. 10 A.M., asleep.

(*a*) The periodicity curve is absolutely nocturnal but embryos are present in small numbers in the peripheral circulation during the daytime. This fact has often been noted before (Fig. 1).

(*b*) The evening rise of the embryo filariæ swarm is more gradual in character than the matutinal fall. The maximum migration of embryos occurs at 2 A.M. (Fig. 1).

(*c*) The number of embryo filariæ and the character of the curve remains remarkably constant when taken on three distinct occasions, separated by a month or more of time—viz., June 4th, August 29th, and Sept. 2nd, 1932 (Figs. 1 and 4).

(*d*) The number of embryo filariæ at the hour of midnight remains approximately the same in 1932 as it was in 1924, a period of eight years, and it has been shown by Mr. Walters that the experimental error of observation in his series is a very small one indeed (Fig. 5).

(*e*) The periodicity curve remained the same after a severe abdominal operation, but it was severely disturbed during a break of sleep (Fig. 2) and after systemic disturbance such as protein shock (Fig. 3). The fall in periodicity takes place immediately the waking state is entered upon.

This series of accurate experiments forges yet another link in the chain of evidence which supports the contention that the sleeping and waking states are primary factors in the periodicity phenomenon in this particular infection. Whether similar fluctuations can be brought about in the relative number of circulating embryo filariæ in the Pacific, non-periodic variety of *F. bancrofti* remains to be seen, and it is hoped that similar experiments on the same lines may be instituted.

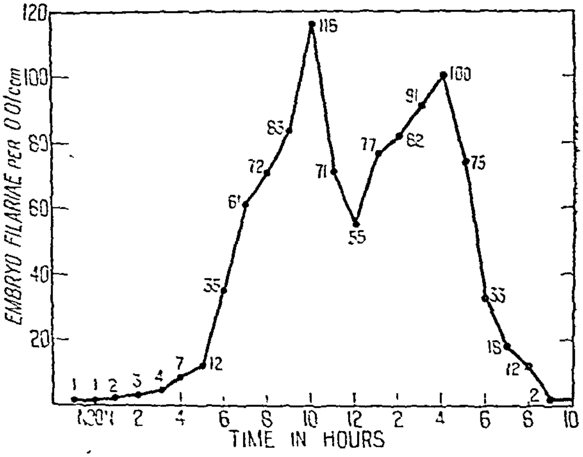

FIG. 3 shows the average number of embryo *F. bancrofti* per 0·01 c.cm. of a patient's blood during 24 consecutive hours whilst undergoing a protein shock. 5.5 P.M., the patient was given an intravenous injection of 50 million T.A.B. vaccine. 6 P.M., complains of vague pains all over body. 6.52 P.M., suffering rigor. 7.5 P.M., temp. 103·4°, sweating. 8 P.M., feels better; temp. 101°. 9 P.M., asleep; temp. 100·8°. 10 P.M., asleep; temp. 100·4°. 11 P.M., awake, temp. 100°. 12 P.M., awake; temp. 99·6°. 1 A.M., awake; given hot meal; temp. 99·4°. 2 A.M., dozing. 3 A.M.–6 A.M., asleep. 7 A.M., awake; feels all right. 8 A.M.–10 A.M., awake.

It is also hoped that Prof. O'Connor and others investigating the possibility of cyclical parturition may undertake similar observations, as the conclusions arrived at in this particular piece of work seem impossible to reconcile with their hypothesis. How, also, can a daily cyclical destruction of embryos explain the phenomenon of non-periodic filaria? In *Dipetalonema perstans* infections (non-periodic) in Uganda, Low[7] counted the embryos in a measured quantity of peripheral blood (20 c.mm.) just before patients suffering from sleeping sickness died and then, immediately after death with the blood still warm, similar measured quantities from the aorta, heart, or lungs. The numbers of embryos present in these sites were always greatly in excess of those in the peripheral blood, indicating a seat of special selection in these parts.

More work might also be done on dogs and other animals, where it will also be found that the seat of special selection of the embryos is often in the large vessels of the thorax, only the overflow, apparently, passing into the peripheral blood with no periodicity. Autopsies on dogs might prove or disprove the cyclical theory.

History and Laboratory Reports

(BY MR. WALTERS)

The patient was first seen at the Hospital for Tropical Diseases in October, 1920, when a series of intravenous antimony injections were given,[8] and again in May, 1924, when Bayer "G. 1919" was tried for treatment.[9]

He was a male Indian native aged 50, born in Calcutta, where he had lived till going to sea 18 years before. He had had fever in 1898 (? nature), syphilis in 1916, and dysentery in 1918. In 1924 he had been in the Hospital for Tropical Diseases. In 1927 he had had stomach trouble: in 1932 he was admitted to the Seamen's Hospital, Royal have finished their course of narcotic treatment without development of ketosis or other serious complications. Of the remaining 7, who showed no ketosis and who did not have glucose-insulin treatment, 3 received only two doses of somnifaine a day. While admittedly few patients have been as yet subjected to the modified treatment, the results have been so satisfactory that we have considered it advisable to publish this preliminary note. Further investigations on this mode of treatment, particularly from a clinical standpoint, are in progress.

We wish to express our appreciation of the interest taken in this work by Dr. P. K. McCowan, medical superintendent of the hospital, and to acknowledge our indebtedness to the Medical Research Council for a grant to the laboratory.

SOME RECENT OBSERVATIONS ON FILARIAL PERIODICITY

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With a Clinical and Laboratory Report by
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Interest has once more been aroused in the seemingly inexplicable phenomenon of filarial periodicity, the existence of which was discovered by Manson in Amoy and further worked out by him and Stephen Mackenzie in London in 1881–82. Since that date little or nothing has been done to illuminate further the pioneer observation of these two workers.

As is well known, the embryos of *Filaria bancrofti* maintain a nocturnal periodicity in the peripheral circulation; that is, they come into and circulate in the peripheral blood at night and disappear during the day. This curious phenomenon, as seen in this particular parasite, appears to be connected with the habits of its definitive host, and so intimately is this the case that the periodicity can in time be gradually reversed if the patient changes his daily routine—for example, sleeping during the day and sitting up at night. This is a well-established fact. In *Loa loa* infections, where the periodicity is diurnal, this reversion cannot be effected easily, and in two cases reported by Low and O'Driscoll[1] no change had taken place in six days' time. Kulz,[2] however, has shown that it may gradually take place.

The observations which are recorded below abundantly confirm the truth of Manson's original discoveries and add weight to the statement of Dr. Mortimer Granville[3]:

> "It is not sleep or waking that has this influence. It is something recurring every 24 hours, just as the habits of sleeping and waking recur, and which is capable of being inverted; just as these habits are, and by the same means. That sleep does not cause the ingress of embryos is evident from the circumstances that egress begins hours before the usual hours of waking, and periodicity is maintained even though no sleep be indulged in for two or three days, and if sleep is continuous, or nearly so, for as long a time. The facts of the case seem to indicate that the conditions favourable to the ingress of the parasites become developed ordinarily during the last few hours of the waking state and that they are slowly eliminated during the last few hours of sleep."

The novel and revolutionary theory of Clayton Lane[4] would explain the phenomenon of periodicity by periodic cyclic parturition on the part of the female filaria with a daily destruction of all the embryos, and this hypothesis has received some support from the carefully conducted observations of F. W. O'Connor[5][6] on the uterine contents of the adult female worms removed by operation at different hours of the day. What is difficult to understand in this theory, apart from the massive daily production of embryos, is the fate of the millions of embryos which would be destroyed by this daily holocaust, and the effect that the absorption of this mass of dead material would exert on the apparently healthy human body. It does not explain, either, the comparative ease with which embryos are kept alive in blood or saline solution outside the human host for a week or more. No adequate explanation is at present forthcoming of what becomes of the millions of embryos so destroyed. A fact repeatedly emphasised is that those cases of *F. bancrofti* with the highest number of embryo filariæ in the circulating blood are often those which show the fewest signs of filarial disease. A massive destruction such as that postulated would have to be sudden and swift so as to cause the disappearance of the brood every 12 hours, and the liberation of this amount of foreign protein, one would imagine, would be liable to produce considerable reaction in the human body—a species of protein shock.

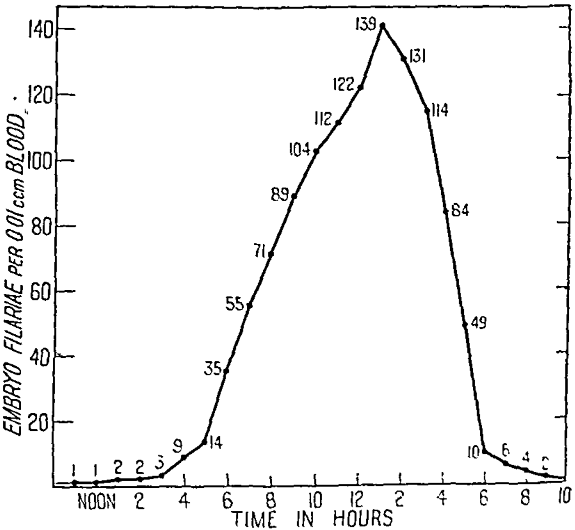

FIG. 1 shows the average number of embryo *Filaria bancrofti* per 0·01 c.cm. of a patient's blood during 24 consecutive hours of normal life. The blood was measured by means of a leucocyte-counting pipette, and these counts represent the mean average calculated from direct counts of living embryos by the cover-slip method and indirect counts from standard quantity thick blood films taken at the same times, being stained and counted afterwards.

A CASE-HISTORY

The observations recorded in the paper accompanying these preliminary remarks have been made after very considerable and minute work by Mr. A. H. Walters, the senior laboratory assistant at the Seamen's Hospital, Royal Albert Dock. The chief points in the case are these. The patient, an Indian steward of the P. and O. Line, has been more or less under observation for 11 years. During this comparatively long period he has exhibited approximately the same number of embryo filariæ in his blood, and they have maintained the same nocturnal periodicity. Apart from a hydrocele and an enlarged testicle, both probably filarial in nature, he has never developed or exhibited any further signs of filarial disease.

The number of embryo filariæ in his blood has been very considerable—about 260 to 20 c.mm. of blood at midnight—and as the patient has frequently been to the Hospital for Tropical Diseases and the Seamen's Hospital, Royal Albert Dock, for dysentery, venereal disease, and finally for pyloric stenosis, there have been ample opportunities for prolonged observations on his blood.

The observations on the nocturnal periodicity in this case were made at hourly intervals, and were carried out with meticulous care. Dry and wet films were prepared at the bedside and examined forthwith, and a standard quantity of 10 c.mm. was employed (which is half the amount of the 20 c.mm. which is commonly adopted). The main points brought out by Mr. Walters's graphs are these :—

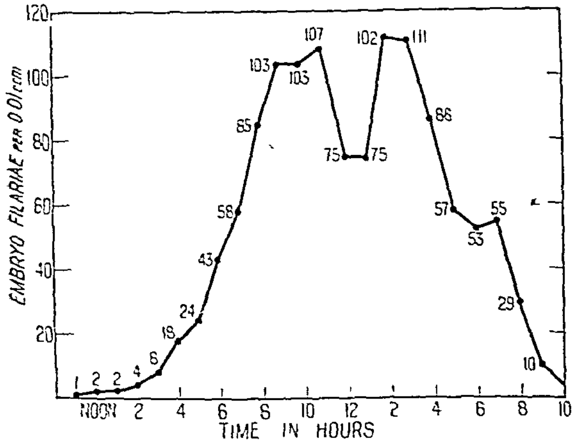

FIG. 2 shows the average number of embryo *F. bancrofti* per 0·01 c.cm. of a patient's blood during 24 consecutive hours of reversed life. The patient was given hyoscine gr. 1/100 and morphia gr. 1/48 at 10 A.M. on June 15th and put to bed in a darkened private room. 11 A.M.–3 P.M.: patient asleep. 4 P.M., awake; given a drink of water and luminal grs. 7. 5 P.M.–8 P.M., asleep. 9 P.M., dozing. 10 P.M., waking and irritable. 11 P.M., fully awake. 11.30 P.M., got up and had meal of tea, eggs, and toast. 12 P.M., out for a walk of 40 minutes in hospital grounds. 1 A.M., fully awake and chatting, feels quite well. 1.30 A.M., had meal of tea and toast; feels quite well. 2 A.M., lying quietly in bed, feeling drowsy. 3 A.M., dozing. 4 A.M., asleep. 5 A.M., awake and tired. 6 A.M., drowsy and slightly irritable. 7 A.M.–9 A.M., asleep but waking at any noise. 10 A.M., asleep.

(*a*) The periodicity curve is absolutely nocturnal but embryos are present in small numbers in the peripheral circulation during the daytime. This fact has often been noted before (Fig. 1).

(*b*) The evening rise of the embryo filariæ swarm is more gradual in character than the matutinal fall. The maximum migration of embryos occurs at 2 A.M. (Fig. 1).

(*c*) The number of embryo filariæ and the character of the curve remains remarkably constant when taken on three distinct occasions, separated by a month or more of time—viz., June 4th, August 29th, and Sept. 2nd, 1932 (Figs. 1 and 4).

(*d*) The number of embryo filariæ at the hour of midnight remains approximately the same in 1932 as it was in 1924, a period of eight years, and it has been shown by Mr. Walters that the experimental error of observation in his series is a very small one indeed (Fig. 5).

(*e*) The periodicity curve remained the same after a severe abdominal operation, but it was severely disturbed during a break of sleep (Fig. 2) and after systemic disturbance such as protein shock (Fig. 3). The fall in periodicity takes place immediately the waking state is entered upon.

This series of accurate experiments forges yet another link in the chain of evidence which supports the contention that the sleeping and waking states are primary factors in the periodicity phenomenon in this particular infection. Whether similar fluctuations can be brought about in the relative number of circulating embryo filariæ in the Pacific, non-periodic variety of *F. bancrofti* remains to be seen, and it is hoped that similar experiments on the same lines may be instituted.

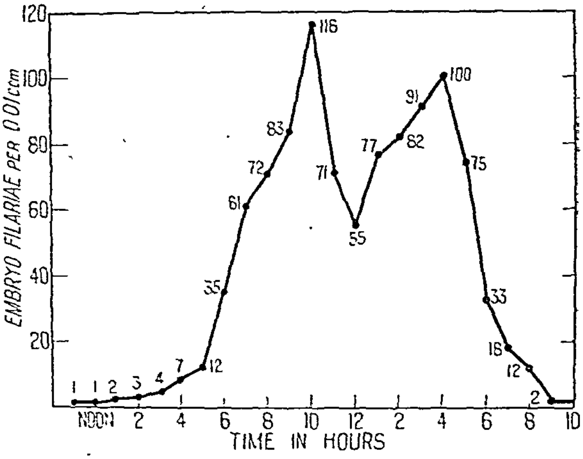

FIG. 3 shows the average number of embryo *F. bancrofti* per 0·01 c.cm. of a patient's blood during 24 consecutive hours whilst undergoing a protein shock. 5.5 P.M., the patient was given an intravenous injection of 50 million T.A.B. vaccine. 6 P.M., complains of vague pains all over body. 6.52 P.M., suffering rigor. 7.5 P.M., temp. 103·4°, sweating. 8 P.M., feels better; temp. 101°. 9 P.M., asleep; temp. 100·8°. 10 P.M., asleep; temp. 100·4°. 11 P.M., awake, temp. 100°. 12 P.M., awake; temp. 99·6°. 1 A.M., awake; given hot meal; temp. 99·4°. 2 A.M., dozing. 3 A.M.–6 A.M., asleep. 7 A.M., awake; feels all right. 8 A.M.–10 A.M., awake.

It is also hoped that Prof. O'Connor and others investigating the possibility of cyclical parturition may undertake similar observations, as the conclusions arrived at in this particular piece of work seem impossible to reconcile with their hypothesis. How, also, can a daily cyclical destruction of embryos explain the phenomenon of non-periodic filaria? In *Dipetalonema perstans* infections (non-periodic) in Uganda, Low[7] counted the embryos in a measured quantity of peripheral blood (20 c.mm.) just before patients suffering from sleeping sickness died and then, immediately after death with the blood still warm, similar measured quantities from the aorta, heart, or lungs. The numbers of embryos present in these sites were always greatly in excess of those in the peripheral blood, indicating a seat of special selection in these parts.

More work might also be done on dogs and other animals, where it will also be found that the seat of special selection of the embryos is often in the large vessels of the thorax, only the overflow, apparently, passing into the peripheral blood with no periodicity. Autopsies on dogs might prove or disprove the cyclical theory.

History and Laboratory Reports

(BY MR. WALTERS)

The patient was first seen at the Hospital for Tropical Diseases in October, 1920, when a series of intravenous antimony injections were given,[8] and again in May, 1924, when Bayer "G. 1919" was tried for treatment.[9]

He was a male Indian native aged 50, born in Calcutta, where he had lived till going to sea 18 years before. He had had fever in 1898 (? nature), syphilis in 1916, and dysentery in 1918. In 1924 he had been in the Hospital for Tropical Diseases. In 1927 he had had stomach trouble; in 1932 he was admitted to the Seamen's Hospital, Royal

Albert Docks, for a recurrence of this. He was operated on, and the stomach was found to be dilated, with fibrous thickening due to previous ulceration on the lesser curvature, sufficient to cause pyloric stenosis. Gastro-enterostomy was performed and the appendix was removed, as it was also diseased.

On June 15th, 1932, there was no definite evidence of filarial disease, apart from slight enlargement of the left testis and a slight hydrocele on the same side. The red corpuscles numbered 5,500,000; the white corpuscles 9375; and the hæmoglobin percentage was 100. A differential count showed 73 per cent. of polymorphonuclear cells, 19 per cent. of lymphocytes, 6 per cent. of eosinophils, and 2 per cent. of large mononuclears. Embryos of *Filaria bancrofti*, but no malarial parasites, were present in the night blood. The fæces showed no ova with the exception of a few *Trichuris.*

As it was evident that the patient would have to be in hospital for a considerable time, the opportunity was taken to do a series of examination of the blood for filarial embryos. Dry and wet films were used, the embryos in the latter being counted at the bedside immediately after preparation; the former were left until the following day, when they were dehæmoglobinised and stained. The counts were found to tally within 0·5 per cent. error factor.

Fig. 1 illustrates a typical nocturnal periodicity; Fig. 2, the irregularity produced by putting the patient to bed during the day and inducing sleep by means of drugs; Fig. 3, the irregularity produced by intravenous injections of T.A.B. vaccine; Fig. 4 (A), another count showing normal periodicity while leading a normal life, and (B) while leading a normal life and after five days atebrin treatment, the latter having no effect upon the periodicity; while Fig. 5 shows the number of embryo filariæ in the patient's blood on the counts done in 1924 and in 1932.

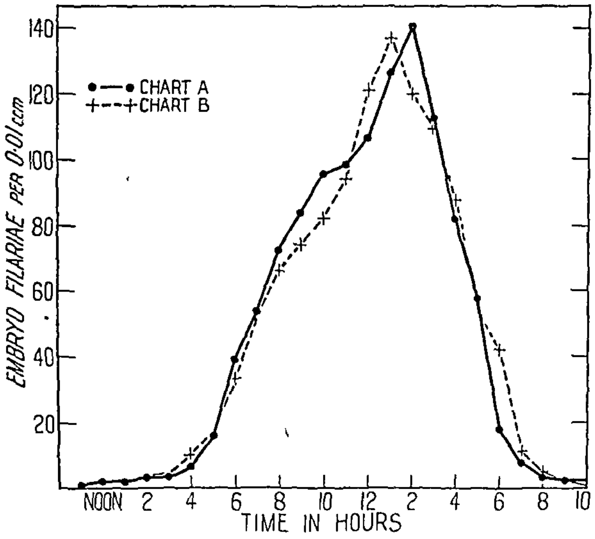

FIG. 4 (A) shows average number of embryo *F. bancrofti* per 0·01 c.cm. of the patient's blood during 24 consecutive hours of normal life and 55 days after gastro-enterostomy. (B) shows the average number in the blood during 24 consecutive hours of normal life and after five days' atebrin treatment (atebrin tablet 0·1 g. three times daily).

The total embryo filariæ counts in the report were all carried out on blood obtained by pricking the second or third finger and wiping away the first drop. Although this is the method at present in general use for blood counts and similar investigations, it is well known that pressure on the finger, size of puncture, and the surface tension set up between the capillaries, the blood drop, and the point of the pipette, all contribute to the small error factor which is undoubtedly present. When the blood was drawn up into the pipette, the ordinary wet films were prepared by mixing the blood with a 0·1 c.cm. drop of physiological saline previously placed on the slide and covering with the cover-slip. Counts were made *immediately;* no variation in embryonic movement was observed whether the specimen was taken at 1 A.M. or 1 P.M. The ordinary thick films were prepared by gently blowing the blood along the lines of an 8 mm. square placed under the slide and then filling in the square with the *remainder of the blood.* This ensured every specimen being of approximately the same dimensions and the four straight edges rendered counting accurate and rapid.

Animal experiments were carried out for us, at our suggestion, by Dr. H. M. Hanschell. The blood of two guinea-pigs, of 150 g. each, was grouped against human sera. Both were found to be non-agglutinators. One cubic centimetre of human blood (containing approximately 122,000 embryos) was then taken from the median basilic vein of the patient at midnight and injected at once into the heart of one of the guinea-pigs, under ether anæsthesia. The animal recovered from the anæsthetic in four minutes and was as alert as usual. No distress was noted in the following 24 hours.

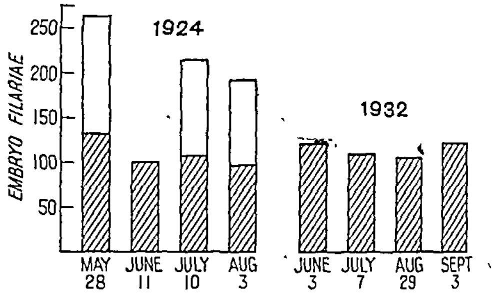

FIG. 5 shows the average number of embryo *F. bancrofti* per 0·01 c.cm. of patient's blood in two series of counts done *at an interval of eight years (1924–32). In 1924 the amount* of blood used in each count was 20 c.mm. The shaded areas indicate the number of embryo filaria in 10 c.mm. All counts were taken at 11.55 A.M. In 1932 only 10 c.mm. of blood was used for each count. All the counts were taken at 12 midnight. The actual counts per 10 c.mm. in 1924 were as follows: May 28th, 132; June 11th, 100; July 10th, 107; August 3rd, 96; average 109 per 10 c.mm. In 1932 the counts were: June 3rd, 122; July 7th, 110; August 29th, 106; Sept. 3rd, 121; average 115 per c.mm.

At 1 A.M. on June 10th, 1932, both guinea-pigs were ether-anæsthetised and 1 c.cm. of blood from the *patient (containing approximately 139,000 embryos)* was injected immediately into each guinea-pig's heart. Both animals recovered as usual, and no distress was noted. The marginal veins of their ears were pricked after 5 minutes, 10 minutes, 15 minutes, half an hour, and hourly up to 14 hours, but no embryo filariæ were detected. The urine of one of the guinea-pigs was examined, and here again nothing was found.

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ENLARGEMENT OF WEST BROMWICH HOSPITAL.—Sir J. Harris Spencer, the president, last week *formally* opened new out-patient and casualty departments at West Bromwich District General Hospital. The cost, about £21,000, has been defrayed to the extent of £16,600 by a carnival and a bazaar. Donations and legacies increased the total to £18,373; the balance has yet to be raised. In addition to a covered unloading place for ambulances, there is a perambulator shelter. There are two theatres, the smaller one being for eye operations, and eye, ear, nose, and throat, X ray, and orthopædic departments. All the departments have steel furniture, and there is a canteen for light refreshments.

TYPES OF PNEUMOCOCCI IN POST-INFLUENZAL PNEUMONIA

By Ian M. Christie, M.B. Glasg., D.P.H.

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The epidemic of influenza in Glasgow which prevailed during December of last year afforded an opportunity of observing the incidence of the types of pneumococci in patients with acute pneumonia admitted to hospital during this period and of contrasting the results with those obtained under normal circumstances.

The following were the general characteristics of the epidemic in the city. An increase of notifications of influenzal pneumonia became noticeable at the beginning of December, reaching a maximum of 117 during the week ending Dec. 17th; deaths certified due to the same cause reached their maximum of 86 during the following week ending Dec. 24th; thereafter a rapid fall occurred in both figures. The highest weekly general death-rate (28·7 per 1000 of the population) was observed during the week ending Dec. 24th. It may be noted that the epidemic was accompanied by a heightened incidence of acute lobar pneumonia at a time when this affection does not usually prevail to anything like the same extent. Deaths certified as due to this cause increased to a maximum of 31 during the week ending Dec. 31st, while those due to acute broncho-pneumonia reached 80 during the week ending Dec. 24th.

Between Dec. 10th, 1932, and Jan. 10th, 1933, dates within which the epidemic occurred, there were admitted to Knightswood Hospital 90 cases of acute pneumonia, of which 60 were typical cases of lobar pneumonia and 30 were broncho-pneumonia or influenzal pneumonia. Table I. gives the distribution of the lobar pneumonias in relation to the frequency and fatality percentages for each type.

Table I.—*Incidence of Types in Lobar Pneumonia*

—	Cases.	Deaths.	Frequency percentage.	Fatality percentage.
Type I. ..	14	1	23·3	7·1
Type II. ..	32	12	53·3	37·5
Type III. ..	7	3	11·7	42·8
Group IV. ..	7	—	11·7	—
Total ..	60	16	—	26·6

These results may be contrasted with those obtained in this hospital during 1932—i.e., Type I., 42·4; Type II., 37·3; Type III., 1·7; Group IV., 18·6 per cent.[1] Again, the general experience of the past three years as given by Macgregor[2] was that these types prevail in non-influenzal times as follows: 38·1, 36·0, 3·9, and 22·0 per cent. in a series of 1077 cases. It was shown by Cowan, Cruickshank, Harrington, et al.,[3] that variations in these proportions may occur. For instance, during the period September, 1931, to April, 1932, the relative incidence was 42, 29, 4, and 24 per cent., Type II. being less prevalent during that winter. It will be apparent from these figures of incidence that the lobar pneumonias of the influenza period were preponderatingly associated with Type II. (53·3 per cent.). Cases of Type I. and of Group IV. were less than usual.

Pneumonias of Type II. were not only more numerous but were unusually severe and fatal. The mortality-rate of 37·5 per cent. is much higher than is customarily experienced. In the various series of cases associated with this type, as quoted by Macgregor for Glasgow hospitals, the mortality varied from 8·6 to 27·8, and was 19·6 in respect of the whole series of 388 cases over the past three years. It thus appears that the virulence of this type was greatly enhanced during the influenza epidemic. A proportion of Type III. infections as high as 12 per cent. is possibly due to lowered resistance during the influenza period. The figures are too small to permit of separation into age-groups, but it may be noted that in the age-group 15 to 25 years there were 12 cases with 6 deaths, an age-period when Type II. pneumonias tend to have a comparatively low fatality-rate.

The behaviour of the different types of pneumococci during influenza has been little observed. Cecil, Baldwin, and Larsen[4] in their study of 2000 typed cases of lobar pneumonia state that "during epidemics of influenza there is always a marked increase in pneumococcus Type IV. pneumonia." The occurrence of Type II. pneumococcus as a prevailing organism in post-influenzal pneumonia appears to be unusual. In the present series the results of the typing of sputa from 30 cases of broncho-pneumonia showed pneumococcus Group IV. to be constantly present in the peritoneal washings of inoculated mice. On the assumption, therefore, that these organisms were responsible for the broncho-pneumonias, the part played by the different types in the 90 cases quoted (consisting of 60 cases of lobar pneumonia with 16 deaths and 30 cases of broncho-pneumonia with 7 deaths) can be expressed as in Table II.

Table II.—*Distribution of Types in 60 Cases of Lobar Pneumonia and 30 Cases of Broncho-pneumonia*

—	Cases.	Deaths.	Frequency percentage.	Fatality percentage.
Type I. ..	14	1	15·5	7·7
Type II. ..	32	12	35·5	37·5
Type III. ..	7	3	7·8	42·8
Group IV. ..	37	7	41·1	18·9
Total ..	90	23	—	25·5

A study of this group of post-influenzal pneumonias suggests that the mortality is due mainly to the invasion by Type II. and Group IV. pneumococci of persons weakened by influenza, with the consequent production respectively of lobar and broncho-pneumonia. It would also appear that when pneumococci belonging to Group IV. cause lobar pneumonia the prognosis is good, whereas in broncho-pneumonia due to organisms of the same group the death-rate may exceed 20 per cent. Another feature of this altered frequency of pneumococcal types is that the high incidence of Type II. infections occurred at a period of the year when cases of adult lobar pneumonia in Glasgow are usually of low prevalence.

Clinically the Type II. infections were severe at all ages. Of the 7 deaths under 25 years, 4 were preceded by signs of toxæmia—the blood cultures taken within 12 hours of death being sterile in two instances and showing 2 and 45 colonies respectively in 2 c.cm. of blood in the remaining two—and 3 were due to septicæmia with a colony count exceeding 1000 per c.cm. The five deaths at the higher ages were all associated with a similar severe degree of septicæmia. In contrast to the Type II. infections, Type III. pneumonia was confined to the upper age-groups. Repeated examinations of the sputum were made, and in three cases the results were verified by lung puncture. The experience gained in the diagnosis of Type III. pneumonia points to the fact that when the sputum is fresh and typically rusty the result of the first typing is almost invariably correct. The cases of influenzal pneumonia presented the clinical features common to this illness. The severity was in proportion both to the amount of lung substance involved and to the degree of capillary bronchitis present. A constant sign was the expectoration of yellowish muco-purulent sputum. Blood culture in seven severe cases proved negative.

CONCLUSIONS

(1) In a series of 90 cases of acute pneumonia admitted to hospital during the influenza epidemic in Glasgow, 60 were lobar and 30 influenzal pneumonia. (2) The distribution of types in the lobar pneumonias showed an altered frequency percentage of 23·3, 53·3, 11·7, and 11·7, as regards Types I., II., III., and Group IV., as compared with the standard for the city—*namely*, 38·1, 36·0, 3·9, *and* 22·0. (3) The incidence of lobar pneumonia during the epidemic was unusually high for the time of the year, its period of maximum prevalence being the months of February, March, and April. (4) The Type II. pneumococcus displayed a much exalted virulence, and was responsible for a case-mortality of 37·5 per cent. (5) Type III. infections occurred in elderly people already weakened by concurrent influenza.

I have to acknowledge my indebtedness to Dr. William Dow, medical superintendent of Knightswood Hospital, and to Dr. A. S. M. Macgregor, medical officer of health for Glasgow.

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MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF EPIDEMIOLOGY AND STATE MEDICINE

AT a meeting of this section on Feb. 24th, the president, Dr. WILLIAM BUTLER, being in the chair, Dr. G. C. M. M'GONIGLE, medical officer of health for Stockton-on-Tees, related some results of the

Removal of a Slum Population to Modern Dwellings

In 1927, he said, an unhealthy area in the borough was demolished and 710 of the inhabitants were housed on a self-contained municipal housing estate which had been specially built for the purpose. He decided to investigate the state of health of these people during the five years succeeding their translation from bad to good housing conditions. The borough of Stockton-on-Tees had at the 1931 census a *population of* 67,722. *Its chief industries*, shipbuilding and engineering, had suffered severely in the industrial depression, but there was also in the borough a good deal of market trade with the surrounding agricultural areas. Unemployment was and always had been rife: only once since 1922 had the percentage fallen below 20 and it was now over 40 for the total male population between the ages of 14 and 65. There were three main types of dwelling-house in the town: modern semi-detached council houses, small inconvenient "middle-aged" houses crowded together in long streets, and old insanitary dwellings, the third type mostly near the river, but also in groups throughout the town. The town council had vigorously carried out a housing policy which comprised the demolition of slums, the building of new houses, and the maintenance of the middle-aged houses. Since the war 1664 council houses had been built. In 1919 various areas of the town were scheduled as unhealthy and others were set aside for reconstruction. A particular area known as the Housewife Lane area was evacuated in the late autumn of 1927 and its 152 families were moved to the Mount Pleasant estate. A similar area known as the Riverside area remained in statu quo ante and provided a control; its population of 1298 consisted of 289 families. The Housewife Lane area consisted of old houses: *either small, containing* one or two rooms, or large, sublet in numerous tenements. One-room tenements were occupied by 83 families and the sanitary conditions and structure were bad. The Mount Pleasant estate seemed to offer everything that modern sanitary science could demand.

Nevertheless, Dr. M'Gonigle went on, after three years the health of the Mount Pleasant population seemed to have deteriorated. At any rate, the death-rate had increased. The mean crude death-rate per 1000 of population for 1923–27 was 12·15 for England and Wales, 18·75 for the Housewife Lane area, and 22·16 for the Riverside area. For the five years 1928–32 the corresponding figures were 12·2 for England and Wales, 26·71 for the Mount Pleasant estate—i.e., the transferred Housewife Lane population—and 20·45 for the Riverside area. Thus there was an increase of 8·47 per 1000 deaths for the people who had been housed on an excellent modern estate and a decrease of 2·9 per 1000 for those who had remained in the old slum conditions. These were the crude figures, but when they had been standardised in the light of the 1931 census the difference was even greater. The mean standardised death-rate for the Mount Pleasant estate was 33·55 per 1000, an increase of 46 per cent. over the mean standardised rate for the same individuals in the previous quinquennium, whereas the Riverside people and the population of Durham county showed a decrease in the second five-year period. The standardised figure for the Riverside area was 22·78 for 1928–32 and 26·10 for 1923–27.

There was a considerable increase in the birth-rate at Mount Pleasant. For England and Wales the birth-rate for 1923–27 was 18·24 per 1000 of population, and it decreased to 16·27 for 1928–32. The county of Durham, the borough of Stockton-on-Tees, and the Riverside area all showed this decrease, but Mount Pleasant had an increase from 35·08 to 44·25. This increase was *not the result of a higher* marriage-rate, an increase in illegitimacy, or a larger proportion of first births. It had not been accompanied by an increase of infant mortality, which was considerably higher at Mount Pleasant (117·8 per 1000 live births) than for the county and borough as a whole, but was substantially less than that of the same people when they were in Housewife Lane (172·6 per 1000 live births). The viability of the *infants born on* Mount Pleasant was no less than that of infants born elsewhere; the neonatal mortality

(26·3 per cent.) compared favourably with that of England and Wales and of the borough (31·5 and 34·2 per cent. respectively). The stillbirth-rate, however, amounted to 61 per 1000 live births compared with 40·5 for England and Wales. Thus the increased death-rate could not be attributed to infant mortality, and the figures showed the main increase to be between the ages of 10 and 45, although there was also an increase in the deaths of children under 10 and of adults over 55. The largest increase was in the 65–75 group, followed closely by the 25–35 and 45–55 groups. Next came the children under 5 and the old people over 75, each with a percentage increase of 9·2. There had been an actual decrease in the age-groups 55–65, 20–25, and 35–45.

The causes of death accounting for the increase were measles, cancer, heart conditions, bronchitis and pneumonia, diarrhœa, nephritis, and puerperal sepsis, but the increase in the last three was trifling. There were decreases in the number of deaths from whooping-cough, diphtheria, cerebro-spinal fever, tuberculosis, appendicitis, and congenital debility. No morbidity and sickness figures were available except the reports of the school medical officers; these showed that the incidence of defects was about the same in Mount Pleasant and Riverside, both areas showing rather more than double the figure for all the elementary school-children in the borough.

Consideration of the causes which might be responsible for the increased death-rate in the Mount Pleasant estate led Dr. M'Gonigle to exclude such environmental factors as housing, drainage, overcrowding, or insanitary conditions. He then carefully investigated the family budgets and the food supplied to the families in an attempt to find the cause of the deterioration in health. The transfer to Mount Pleasant had increased the rent paid by the inhabitants from 9*s.* to 13*s.* 4*d.* per week, but as two families were in some cases sharing a house the mean rent per family per week was now 8*s.* 10*d.* In Riverside area the figure was 4*s.* 10¾*d.* As a result of unemployment the weekly income was strictly limited. The tenants coöperated in the investigation by supplying details of the family budget; 28 budgets were obtained from the Mount Pleasant and 27 from the Riverside area. Of these, 5 of the Mount Pleasant families were employed and 8 of the Riverside families. It was found that the unemployed on Mount Pleasant could only spend 36·7 per cent. of their income on food; a total of 2*s.* 10½*d.* per "man" per week. The food purchased had been analysed and compared with a standard diet. In no case did the first-class protein attain the quantity required by the normal diet. The least deficiency (20 per cent.) was among the employed families in the Riverside area, and the greatest deficiency (about 50 per cent.) among the unemployed on Mount Pleasant. The figures for total protein corresponded. The employed of Mount Pleasant consumed 5·6 per cent. above the normal of fats, but these were for the most part margarine, lard, and bacon fat. The unemployed on Mount Pleasant and Riverside consumed only 66 and 76 per cent. of the normal fat requirements respectively. The consumption of carbohydrates in no case fell seriously below the normal, as white flour, potatoes, and sugar constituted one of the cheapest forms of bulky food and supplied the necessary calories.

There was, Dr. M'Gonigle said, reason to suppose that deficiencies in vitamins and minerals were in proportion to or somewhat greater than the other deficiencies. Calculations suggested that it was not possible to purchase normal quantities of foodstuffs for less than 4*s.* 6*d.* per "man" per week.

In summing up his conclusions, Dr. M'Gonigle remarked that comparison of the two areas revealed no adverse influence operative upon the Mount Pleasant estate other than variations in the composition of their diets. Whether these differences were responsible for the higher death-rate upon this estate might be a matter for conjecture. His investigations had failed to detect any other probable cause.

SECTIONS OF COMPARATIVE MEDICINE AND OF THERAPEUTICS AND PHARMACOLOGY

A JOINT meeting of these sections was held on Feb. 22nd, the chair being taken by Mr. W. HORNER ANDREWS and later by Dr. E. P. POULTON.

A discussion on

Plant Poisoning in Man and Animals

was opened by Mr. W. HORNER ANDREWS. He pointed out that plant poisoning of cattle in this country was much rarer than in the colonies owing to the fact that the recognised poisonous plants had been almost eradicated from our home pastures by long-continued cultivation, such poisonous plants as remained being practically confined to the hedgerows. Many reputed toxic weeds were not as toxic as they were thought to be and probably many other plants were harmful, though not recognised as being so. The most likely reason why cattle feed on poisonous plants was the lack of more appropriate food. The most difficult cases of poisoning of cattle by plants were those in which there was a considerable latent period between the ingestion of the plant and the onset of the symptoms of poisoning. In poisoning by *Senecio latifolia* the latent period was 96 days, by which time an animal might long have ceased to eat the plant and owners would be unlikely to associate it with the symptoms observed. Chronic interstitial pneumonia was, in Mr. Andrews's experience, a typical sequel to poisoning by *Crotalaria dura*, which opened a way to secondary bacterial infection. He referred also to a South African plant which contained two poisonous principles, one a cyanogenic glucoside capable of killing a beast in an hour, and one a toxic protein, which was liable to set up three days later acute gastro-enteritis in the animal if it survived poisoning by the hydrocyanic acid.

Sir WILLIAM WILLCOX said that plant poisoning of human beings in this country was practically restricted to children and to a comparatively small number of ignorant or mentally deficient adults. He drew attention to the different degree of toxicity manifested by the same poison in different animals, instancing the insensitiveness of rabbits to belladonna or to aconite and the great tolerance to strychnine shown by the horse and ox, compared with that shown by man; on the other hand, the frog was so sensitive to strychnine that the physiological test of tetanic convulsions in a frog was much more reliable than even the very delicate chemical tests for this alkaloid. As an example of delayed action of poisons in human beings he quoted the consumption of imperfectly matured tobacco which was liable to set up thrombo-arteritis obliterans, leading to gangrene and most probably amputation. He described the effects and uses of a number of poisons, including the poisoning of fish by means of picrotoxin or of Dherris root.

Dr. PAUL HAAS drew attention to the difficulties in the classification of poisonous plants. While some families, as for example, papaveraceæ, solanaceæ, ranunculaceæ and leguminosæ included plants such as the poppy, belladonna, aconite, and laburnum rich in alkaloids, other families like labiatæ or rosaceæ did not contain any alkaloid-bearing plants, though the rosaceæ contained a great number of plants containing glucosides. Remarkable differences occurred between closely related species of the same family as in the oriental poppy *Papaver somniferum*, which contained some 25 alkaloids—mostly poisonous—while the common field poppy *Papaver rhœas* contained only one alkaloid, rheadine, which was practically innocuous. The effects of climate or external conditions upon the same plant grown in different parts of the world was illustrated by the common hemp, *Cannabis sativa*, which, when grown in India, was the source of hashish, while the same plant grown in this country produced only traces of this material. Linseed, again, when grown in hot climates contained considerable quantities of the cyanogenic glucoside linamarin, while very much less of this substance was contained in plants grown in cold damp climates. Cultivation also led to loss of poisonous glucoside in the wild bitter almond or the Burma bean. Attempts to explain the significance to the plant of poisonous alkaloids were also beset with difficulties; whilst the seeds of nux vomica, belladonna, or taxus were rich in alkaloids, the seeds of the oriental poppy were free from them, although the latex obtained from the fruit capsule was very rich in these bodies.

Dr. E. P. POULTON spoke of the occasional toxicity of honey.

Mr. J. A. NICHOLSON gave a summary of his work on the feeding of rabbits and sheep on different species of buttercup from which he concluded that these were practically innocuous, though the expressed juice of *Ranunculus acris* or *R. repens* injected into the stomach in increasing doses caused gastro-enteritis followed by death, without however the exhibition of symptoms of poisoning by a highly toxic substance.

Mr. J. T. EDWARDS gave an account of the use in India of *Abrus precatorius* for the criminal poisoning of cattle for the purpose of obtaining the hides.

SECTION OF OBSTETRICS AND GYNÆCOLOGY

A MEETING of this section was held on Feb. 17th, when Dr. ELIZABETH HURDON read a paper on

Radium Treatment of Carcinoma of the Corpus Uteri

She said that radium had been used for many years as a palliative measure for the treatment of cancer of the body of the uterus but surgery had generally been looked upon as the treatment of choice for most cases. A few clinics had systematically used a combination of radium therapy and surgery. The combined figures from the literature on about 1500 cases treated by hysterectomy gave the five-years cure rate as 43 to 65 per cent., the rate of operability having been 75 per cent., and the primary mortality-rate from 3·3 to 9 per cent. Radium therapy alone had been used for 20 years. The combined results of nine leading clinics on a total of 740 cases showed a five year survival-rate of 32 per cent. on all cases and 42 per cent. for the operable cases only. The immediate risk was usually looked upon as nil, but might be as much as 3 per cent. With modern technique the five year survival-rate of operable cases was given as from 70 to 80 per cent. In the Marie Curie Hospital 68 cases had been treated since October, 1925, 700 cases of cancer of the cervix having been treated during the same period. Only 21 corpus cases were treated more than three years ago and only seven more than five. Of these, four were living and well. The one operable case had died at the end of five years from cerebral hæmorrhage and the two inoperable cases had died of metastatic cancer with no sign of growth in the uterus. Of the total cases, 46 were living.

Technique.—A microscopic examination was made in all cases. Radium was given in three applications of 22 hours each, at one and two weeks' interval. Both intra-uterine and vaginal applications were made. A central applicator containing radium tubes in tandem was introduced into the uterine cavity so as to extend the entire length to within 1 cm. of the external os. An empty rubber cuff filled the cervical canal below the applicator. In addition two small applicators were passed up into the uterine cornua. The radium was distributed so that all intra-uterine tubes contained 8 mg. of the element to each cm. of active length. A vaginal plaque was placed high up in each lateral vaginal fornix, containing 20 mg. of the element in two out of the three treatments. The radium tubes were screened with 1 mm. platinum and 1·5 mm. rubber. The standard total intra-uterine dose was 4300 to 4800 m.e.h., the vaginal dose 1760 m.e.h. Two-thirds of the standard dose was given for a small senile uterus. One primary death had resulted from giving the maximum intra-uterine dose to a small senile uterus, from necrosis of the uterine wall, and septic peritonitis. In three cases stenosis of the cervix, producing pyometra, had proved a late complication. This result would not follow with present-day technique.

Dr. Hurdon stated that fibroids interfered with effective radiation and she regarded tubo-ovarian and other pelvic infections as contra-indications. She was of opinion that the results of irradiation treatment would prove to be equal to surgical results and that combined radium therapy and external radiation was the best method.

DISCUSSION

Mr. JOHN BEATTIE compared the results of two groups of cases of operable carcinoma of the body treated respectively by combined radiation methods and by hysterectomy at St. Bartholomew's Hospital. The survival-rate was three times as high in the group treated surgically as in the radiation group, but the dosage of radium was admittedly inadequate. He discussed the various types of carcinoma with special reference to their sensitiveness to radiation, and pointed out that the majority of growths of the proliferative adenocarcinomatous type were heavily infected. The risk of inserting radium in these cases was great.

Dr. J. H. HANNAN emphasised the difficulty which sometimes arises in the histological diagnosis of fragments removed by curetting. While this uncertainty existed caution was necessary in assessing the results of radium treatment. Inevitably a certain proportion of cases classed as malignant were, in fact, innocent.

Dr. HELEN CHAMBERS discussed the histological grading of the 68 cases treated at the Marie Curie Hospital. As extensive curetting was not encouraged, the amount of tissue available was small and she was not prepared to accept this as a fair sample of the growth in the uterus. The data was insufficient to determine whether the histological grading had any bearing on prognosis.

Dr. MALCOLM DONALDSON thought that there were so few cases of carcinoma of the body which were technically inoperable and therefore suitable for radium treatment that all London gynæcologists should agree to give a trial to the same radiological technique. Discussing Dr. Hurdon's methods he doubted if the small containers which were said to be placed in the cornua of the uterus actually got into that position. An X ray photograph would decide that question. He considered that the right treatment when possible was to do a pan-hysterectomy followed by high voltage X ray therapy.

Dr. **Everard Williams** maintained that fruitful results in radium treatment of cancer of the corpus would depend on further study of the grades of malignancy in relation to their radio-sensitiveness on the basis suggested by Prof. Ewing. In our present state of knowledge he would prefer to treat the adenoma malignum type by radiation and other types of hysterectomy, preferably by the vaginal route.

Mrs. **Ivens-Knowles** was not convinced that radium treatment was suitable for all cases. She referred to a case in which it had been necessary to resect a coil of small intestine which was adherent to the fundus of the uterus. The patient was alive ten years afterwards. She favoured vaginal hysterectomy in cases of extreme obesity, advanced age, or chronic bronchitis in which abdominal operation was contra-indicated.

Miss **L. Martindale**, in reviewing a series of 56 of her own cases treated between 1920 and 1932, found that she had performed panhysterectomy on 41 of these (73 per cent.) and had treated the remaining 15 (27 per cent.) with radium. In 18 of the hysterectomy cases she had followed up treatment with intensive X ray therapy with a view to preventing recurrence. In 11 of the operated cases radium had been used in addition, mainly for recurrence in the vaginal vault or in the lower end of the vagina.

Mr. **T. G. Stevens** asked Dr. Hurdon to state on what grounds she had classified her cases into "operable" and "inoperable." He had met few cases of carcinoma which were technically or clinically inoperable.

REPLY

Dr. **Hurdon**, in reply, admitted the difficulty of determining inoperability in cancer of the corpus cases. The only cases classed as inoperable were those in which an unsuccessful laparotomy had been performed or in which massive fixed growth involving the cervix made removal by surgery clearly impracticable. In reply to Mr. Beattie, who had referred to papillary growths already infected, she stated that her practice was to insert the usual dose after preliminary douching with flavine lotion. With the exception of slight rises of temperature there were no ill-effects.

PATHOLOGICAL SPECIMENS

Dr. **M. W. Bulman** showed four specimens: A section of curettings from a woman aged 29, showing tuberculous endometritis; a specimen of sarcoma of the uterus, ; a specimen of unruptured interstitial tubal pregnancy; and a specimen of tubal pregnancy retained for two years and eight months.

MEDICAL SOCIETY OF LONDON.

Undulant Fevers in Non-tropical Countries

At the meeting of the society held on Feb. 27th, the president, Sir **John Broadbent**, occupying the chair, the subject for discussion was the increased frequency of fevers of the undulant type in non-tropical countries, and its relationship to infection by cow's milk.

Dr. **P. H. Manson-Bahr**, in opening the debate, said the term "undulant fever" was a convenient one under which to embrace several clinical pyrexias which were due to closely allied organisms. Practitioners in tropical medicine were familiar with these clinical variations in fevers due to biological strains of the same parasite; and fevers of the undulant type were all due to organisms of the same bacteriological group. Applied to this type of disease the term "Malta fever" was a misnomer, as it was to-day commoner in other countries than in Malta, and inhabitants of that island resented the implied stigma. In man the following varieties of undulant fever could be recognised:

(1) The original type contracted from goat's milk, the causative organism being *Brucella melitensis*.

(2) The localised aberrant type, such as was found in North Africa, contracted from goat's milk and due to *Brucella para-melitensis*.

(3) The abortus type, which appeared to be world-wide, but was especially prevalent in France, Denmark, Great Britain, and the United States in recent years. The causal organism here was *Brucella abortus*, and the origin of infection in man seemed to be cow's milk. In pigs especially a form was found which was due to *Brucella bronchosepticus*.

In 1905 the close association of undulant fever with the presence of goats was proved by Sir Themistokles Zammit, and soon thereafter the greater number of infected goats in Malta were destroyed, and the drinking of unsterilised goat's milk was entirely forbidden. This resulted in the almost complete disappearance of the disease.

In typical undulant fever there were wide variations in the character and undulations of the temperature chart. The temperature might rise to 105° or even 106° F. One undulation might last three months, and the fever might last for a year or longer, but seemed eventually to subside. It might be intermittent, and so lead to a diagnosis of tuberculosis. Usually the temperature was highest between 4 and 6 P.M., a point of differentiation from fevers of septic origin. Arthritic pains, with effusions, flitting from one joint to another, had led to confusion with influenza. But the pain was, in some cases, limited to fascias and bony prominences exposed to pressure. The associated night-sweats were more profuse and exhausting than those of any other disease. In the melitensis form the spleen was generally enlarged, but the absence of splenomegaly at an early stage should not negative the diagnosis. Hæmorrhages from nose or gums and hæmaturia were common, also purpuric skin hæmorrhages. Complications included neuralgias and rheumatic pains, while among the sequelæ were abscess, orchitis in the male, mastitis in the female, parotitis, and neuritis. In women the infection caused dysmenorrhœa and menorrhagia, and certainly predisposed to abortion and premature labour.

With regard to the abortus type, Dr. Manson-Bahr pleaded for a more appropriate name, for the disease was not confined to the female and did not necessarily imply liability to abortion. He suggested "undulant fever of abortus type," or "Bang's disease." The infection produced a distinct disease in domesticated animals, was communicable to man, in whom it could cause a fever almost exactly resembling that of the melitensis type. It had now become very common in high-bred cattle herds, especially when they were stable-fed. The organisms occurred in the vaginal discharge and in the uterine exudate, and they were excreted in the milk for weeks and months. In Washington 12 to 14 per cent. of commercial milk was thus infected; in Chicago 30 per cent. Often the organism had been found in bulls' genitalia, so that male animals could transmit the infection to the herd.

The diagnosis was readily made by serum agglutination, which occurred in dilutions from 1 in 100 to 1 in 10,000; the agglutinins were also present in the milk of infected cows. An intradermal test had been found useful in diagnosis. The common method of prevention in veterinary practice consisted in isolating infected animals and producing active immunisation in non-pregnant animals with living cultures, after which the abortion-rate came down to about 6 per cent. For pregnant animals immunisation was attempted by means of killed cultures. Undulant fever of the abortus type had now been reported in Italy, U.S.A., France, Denmark, Sweden, Canada, Germany, Holland, Austria, Switzerland, Palestine, and Poland.

The leucocyte count in abortus was distinctive; there was usually a slight leucopenia, with a relative increase in the lymphocytes. Abortus infections ran a much milder and shorter course in man than did those of the melitensis type. Dr. Manson-Bahr referred also to what he termed "sub-clinical cases"—i.e., those which had small rises of temperature which would not be suspected unless four-hourly readings were taken. The recovery of the organism by blood culture was the most satisfactory method of making the diagnosis, but the specimens should be taken fresh from the patients and inoculated into a sufficient quantity of medium, at body temperature; sometimes ten days were needed to allow the organism to develop.

With regard to treatment, Dr. Manson-Bahr did not feel on secure ground. He did not believe in starving patients; they should be well fed on an easily assimilable diet, with adequate fluids to promote sweating. A combination of phenacetin and aspirin alleviated the joint pains. For insomnia he ordered warm sponging, with bromides, allonal or medinal. He had not traced any marked effect from the use of vaccines. Dr. Miller had found that three or four injections of intravenous T.A.B., in doses of 50 to 150 million organisms, cut the fever short, and this was well worth trying.

THE PATHOLOGY OF THE CONDITION

Prof. G. S. **Wilson** referred particularly to the pathological side, using the term "undulant fever" in a general way, owing to the similarity of the causal organisms. The bovine abortus type would not grow under ordinary aerobic conditions; the addition of 10 per cent. of CO_2 was needed. He had collected records of 136 cases of undulant fever in which the diagnosis had been made by agglutination; in 12 it was confirmed by cultivation from the blood or urine or fæces. Ninety-two of these cases occurred in England, 18 in Scotland, and a few in Wales and Ireland. It occurred mostly between the ages of 20 and 50, and males were affected about twice as frequently as females, a curious preponderance for a milk-borne infection. Ninety-seven of the 136 cases occurred in towns. In Denmark two-thirds of the cases were related not to consumption of milk so much as to direct contact with infected cattle—i.e., on farms and dairies, but in this country the largest number of cases occurred among the clerical, medical, and engineering professions. The disease appeared to be more common in this country than it was, though the incidence could be determined only indirectly.

With regard to mode of infection, most of the subjects admitted drinking milk only when closely questioned, their first answer being a denial. Often the infection was incurred on holiday, when milk was drunk at a farmhouse. Cream was often rich in the organism. Butter was not likely to be a cause, as 90 per cent. was imported from abroad, having been pasteurised, a process which destroyed the bacillus. Hard cheeses were not the source of infection incriminated, but soft cheeses, which were usually eaten soon after manufacture, might carry infection. On the other hand, milk and cream were heavily infected. In recent epidemics, in which the CO_2 technique was used, a high proportion of raw milk was found infected with the *Br. abortus*; in Cardiff it was 34 per cent., in some other districts slightly less. Among the 136 cases all the victims had been drinking raw milk. In the large towns in this country 70 per cent. of the milk sold was pasteurised, in London 95 per cent., and comparatively few cases occurred in these towns, and those mostly among people who had recently come from the country. It used to be argued that if the disease was due to milk it should be commoner than it was; but that argument was based on the idea that the organism was the only essential cause. It was now realised that the predisposing factors were equally important, and the organism might gain access to the tissues without producing clinical symptoms; the disease might be latent, as might tuberculosis. Latent infections were very common in people who came a good deal into contact with abortus, as shown by figures recently collected. For instance, among Liverpool slaughterers instead of the usual 1·4 per cent., 12 per cent. agglutinated abortus. At the recent Veterinary Congress at Folkestone, Prof. Wilson, having persuaded 98 veterinarians to allow him to examine their blood, found that 20 per cent. contained agglutinins to abortus. In diagnosing undulant fever it was important to take both the clinical and the serological evidence together; it was not justifiable to make a diagnosis on the laboratory findings alone.

THE CLINICAL ASPECT

Dr. **Theodore Thompson** confined his remarks practically to the clinical aspect. In England the first clinical cases were described by Box and Bamforth, in 1925 and 1927 respectively. The incubation period was about the same as that of Malta fever—i.e., 5–15 days—and the symptoms resembled a mild attack of Malta fever. In a very severe fatal case of ulcerative endocarditis *Br. abortus* was grown from the blood. The most striking clinical feature was the continuance of pyrexia without obvious cause; its wave periods might last from one to four weeks. The patient might feel well throughout, the chief complaint being profuse sweating, often accompanied by an unpleasant odour of the skin. Melæna had been noted, but was not at all common. In pregnant women, undulant fever frequently led to abortion. The blood condition in the disease was very important; a mild anæmia was present, but the most striking feature was a marked diminution in the white corpuscles, which might not be more than 4000 or 5000 per c.cm. *Br. abortus* was nearly always agglutinated in a higher dilution than was *Br. melitensis*. The melitene intradermal reaction was useful in diagnosis; inoculation of the organism into the skin substance produced a large pink wheal, which continued for two or three days.

The differential diagnosis was mainly from typhoid, paratyphoid, rheumatic fever, general tuberculosis, endocarditis, Hodgkin's disease, influenza, and infective arthritis. Treatment did not appear to be of avail in a large number of cases; the disease seemed to run its course uninfluenced by drugs or vaccines. Sweating could be relieved by a pill containing gr. ¼ of belladonna.

VETERINARY EXPERIENCES

Mr. L. E. W. **Bevan** remarked on the parallelism between many human and animal diseases, and spoke of his experiences as a veterinarian in Southern Rhodesia. Having read the work of Alice Evans, it occurred to him in 1921 that some of the mysterious cases of pyrexia of unknown origin which came into the Salisbury Hospital might be the result of abortus infection. He therefore obtained serum from cows in Kenya Colony, and the Royal Veterinary College, London, and found that the serum of one particular patient agglutinated all of them. Since then some 300 cases of the kind had been admitted into Rhodesian hospitals. The diagnosis was made by serum agglutination, and sometimes by means of the abortiscope. In Rhodesia it was not always possible to obtain a laboratory diagnosis. The subjects were usually severely ill, and some had died of the disease. No remedy had been found. The subjects of the disease were often robust men. In this country bovine abortion was astonishingly prevalent. Contact with infected animals must be a very important means of infection, for veterinarians as a class did not claim that their favourite beverage was milk. In the general population of England and Wales there must, he thought, be some degree of resistance, tolerance or immunity to the organism, otherwise the incidence would be far greater.

The PRESIDENT said that some such resistance must be postulated. Recently he read in a paper communicated to a pathological congress in Paris in 1931 that in France undulant fever was caused more commonly by sheep and less frequently by goats. It had been stated that in America cases had been treated by the direct transfusion of 500 to 700 c.cm. of blood, and that thereafter the temperature fell in from one to three days.

Dr. H. L. GLYN HUGHES asked what was the duration of the shortest known and proved case.

Dr. E. CREED said that last August he had seen a man who had been ill for ten days, and was suspected to be a case of typhoid fever, but the Widal reaction was negative. Abortus agglutinations were positive in dilutions of 1 in 50. Temperature fell on the day he saw the patient, the tenth day of the illness, and there had been no feverish return.

REPLY

Dr. MANSON-BAHR said that in the Pyrenees and adjacent regions herdsmen and others associated with sheep rather than goats, and this might explain the attribution of cases to sheep. There was considerable evidence that the disease was not by any means solely contracted from the drinking of goat's milk. Some cheeses were made from sheep milk.

Prof. WILSON attributed great importance to the existence of the disease in a latent form; the presence of the causal organism in the human body was not always accompanied by detectable symptoms.

CORRIGENDUM.—In the reported remarks of Mr. C. A. Scott Ridout on p. 305 of THE LANCET for Feb. 11th, the 15th line should read: "In five years, from 1927–1931 he operated on 196 cases in private practice apart from hospital cases, and four patients died." He was speaking from 24 years' experience entirely apart from the number of cases quoted.

REVIEWS AND NOTICES OF BOOKS

Workmen's Compensation: Its Medical Aspect

By Sir JOHN COLLIE, C.M.G., D.L., M.D. London: Edward Arnold and Co. 1933. Pp. 160. 7*s.* 6*d.*

To condense the complicated law and practice of Workmen's Compensation into 160 pages, everyone of them lucid and readable, is no mean feat. It has been accomplished ably by Sir John Collie. As he points out, compensation now forms a very large part of the working expenses of industry, and there has been a steady yearly rise in the proportion of employees compensated and also in the amount paid in each case. In the mining industry in 1930 the cost to the employer per person employed in the whole industry was over £3, representing a charge of 2½*d.* on every ton of coal raised. Public sympathy naturally tends to favour the injured workman, and it is particularly desirable that the doctor's attitude should be judicial, and his report of real assistance to the employer, or to the court if the matter comes to litigation. The author reminds us that he has earned the gratitude of the profession by establishing in the courts some minor but important points of medico-legal practice—e.g., that the employer has the right to choose what medical examiner he pleases, that the workman's solicitor may not attend the examination, and that the examiner cannot be obliged to conduct his medical examination in a solicitor's office. He gives much useful information on the art of disentangling knotty problems, such as that of "partial disability" or the "novus actus interveniens"—i.e., where some new disaster has intervened giving a "fresh origin to subsequent consequences." A valuable chapter describes those industrial diseases scheduled in the Act as entitling the sufferer to compensation if contracted in the course of employment. There is much useful advice on the subject of which Sir John Collie is an acknowledged master—the detection of malingering. His very enthusiasm may prove something of a snare for the novice in the medico-legal field, who is apt to get the facts a little out of focus. Experience shows that there is need to distinguish carefully between the honest man who is not so ill as he thinks he is, a very common phenomenon, and the deliberate malingerer, who is much more rarely encountered. A patently suspicious attitude on the part of the examiner, or a tactless zeal in practising the traps so ably described by Sir John Collie, may easily harden resistance and create the very condition he sets out to diagnose. Applied with sympathy and humanity, however, the principles set forth in this book should prove an invaluable guide in a difficult by-path of medicine.

The Common Cold

Vol. VIII. of the Annals of the Pickett-Thomson Research Laboratory. By D. THOMSON, O.B.E., M.B., Ch.B., D.P.H., and R. THOMSON, M.B., Ch.B. London: Baillière, Tindall and Cox. 1932. Pp. 738. £3 3*s.*

THIS prodigious volume presents in an orderly form the contents of 2000 papers on the common cold, which appear to include everything of consequence which has ever been written on this subject. The system which has permitted this compilation is unusual, if not unique, since for years past all papers appearing in what must be a large number of journals have been classified by the authors, and the resulting collection now includes nearly 500,000 original papers and abstracts, so arranged that it would apparently be possible at once to assemble the material for a comprehensive monograph on any medical subject. This is a staggering thought. Whatever the merits of the cement (if the authors' own observations may so be described) with which this gigantic mosaic is put together, a great service has been performed in providing such a work of reference.

Although this volume is chiefly concerned with the bacteriology of the common cold, it includes considerations of the anatomy and physiology of the upper air-passages, of factors predisposing to infection, complications and sequelæ of colds, and their treatment and prevention. Each subsection concludes with the authors' own critical observations on the material presented, and their main thesis, based largely on a study of the nasal flora in health and during colds in their own persons and those of their colleagues, is that many colds are clearly attributable to ordinary bacteria. That this proposition should again be stated when there is a tendency entirely to disregard the ordinary flora in the search for a virus is a good thing; what would be better than the presentation of both hypotheses from different quarters is a study of the problem from both standpoints simultaneously by the same individuals, a thing which hitherto appears never to have been done. The authors' studies are based on cultures using Crowe's medium, and a series of excellent photographs illustrates the colonial appearances observed. There are very few references to the examination of direct films of the exudates cultivated, and no other means of judging the numbers of bacteria in the material examined are available; some form of quantitative technique would enhance the value of these studies. While comment throughout the book is mainly balanced and judicial, there are occasional quite unjustified assumptions, and the strictures passed on horses, domestic animals, and vermin on the last page, including the fantastic assertion that dogs in towns should be provided with special water-closets, would reflect seriously on the whole volume if it could not be supposed that they were written in a moment of elation at the conclusion of a colossal task. There is, of course, a full list of references; there are also very full indexes, and the pages being exceptionally large as well as numerous, the volume may be computed roughly to contain half a million words.

Le Genou

Anatomie chirurgicale et radiographique. Chirurgie opératoire. By ANTOINE BASSET, Professeur agrégé à la Faculté de Paris; Chirurgien de l'Hôpital Beaujon. Paris: Masson et Cie. 1932. Pp. 187. Fr.45.

THIS monograph on the knee-joint is one of a series on which Dr. Basset is working; each volume is to deal with the surgical and radiographical anatomy and the operative surgery of a separate joint. This, the first to appear, is clearly written, complete in detail, and beautifully illustrated. Thirteen pages are devoted to a description of the normal external, or topographical, anatomy which, as the author says, is the surgeon's guide to the internal structure of the joint. The signs and symptoms of disease do not come into the scope of the work, but every method of approach used in opening the joint and every incision is very carefully described and illustrated. A section is included on traumatic surgery, which deals with fractures of the knee, injuries of the menisci and of the cruciate ligaments, and their operative treatment. Another section deals with the various methods of simple arthrotomy in the treatment of hæmarthrosis, hydrarthrosis, and pyæmia of the knee-joint. For the last-named condition in its early stages Dr. Basset advocates arthrotomy, evacuation of the joint contents, lavage and closure without drainage; he believes drainage to be absolutely contra-indicated in early cases, but discusses in great detail the drainage methods he prefers for more advanced cases. The major operations, particularly arthrodesis and excision, are clearly described, the operation of the author's choice being first set out and followed by important modifications and alternatives.

The work will appeal to all who are interested in the practical surgery of joints.

Acidosis and Alkalosis

By STANLEY GRAHAM, M.D., F.R.F.P.S., Leonard Gow Lecturer on the Medical Diseases of Infancy and Childhood, University of Glasgow; and Visiting Physician, Royal Hospital for Sick Children, Glasgow; and NOAH MORRIS, M.D., B.Sc., D.P.H., F.R.F.P.S., Lecturer in Biochemistry to the University of Glasgow; and Biochemist to the Hospital. London: E. and S. Livingstone. 1933. Pp. 203. 7*s.* 6*d.*

PROGRESS in the study of changes in acid-base equilibrium and of their clinical importance has been so rapid, and the literature so widely scattered, that it has been difficult for the clinician to grasp and apply at the bedside the new knowledge. In this book the modern views on the regulation of acid-base equilibrium are clearly and succinctly outlined, while the various morbid conditions which are liable to disturb it are discussed in so far as they are at present understood, and attention is directed to the appropriate therapy. The approach is essentially clinical. The authors have concerned themselves primarily with disturbances of acid-base balance as they occur in childhood, since it is during this period that changes arise most readily and are of the greatest importance. The book would have been even more valuable if rather more attention had been paid to such surgical conditions as intestinal obstruction and paralytic ileus; pyloric stenosis, however, is very fully considered. The vexed questions of the biochemical treatment of gastro-enteritis of infancy and the significance of ketosis are clearly discussed, though the paragraph devoted to use of a ketogenic diet in the treatment of chronic pyuria is too brief to be of practical value. There are a few minor omissions, probably unavoidable in a volume of this size, but the book must be commended as of high practical use.

The Arches of the Years

By HALLIDAY SUTHERLAND. London: Geoffrey Bles. 1933. Pp. 293. 10*s.* 6*d.*

THIS is a loosely put together series of biographical incidents with a somewhat fantastic title, and all the chapters have similar adornment—" Arcadia " means the Highlands, " Exiled " means a visit to Spain upon the directions of a father, the " Gate of the Sun " describes Seville, and " Blood and Sand " records a bull-fight. The impression left is unfortunate because some of the occurrences related or reactions received can hardly be described as out of the common and demanding picturesque captions. But Dr. Sutherland's adventure as an amateur toreador was well worth recording; he may be congratulated upon his courage and his luck. Undoubtedly the many friends and acquaintances of the author will like to have a copy of the work, which is probably not expected to make a more general appeal than do any of the numerous personal reminiscences which are now published. It is a lively and well-written book.

THE LANCET

LONDON: SATURDAY, MARCH 4, 1933

CHILDREN IN THE CURRICULUM

At the winter session of the General Medical Council last November, when the reports of the examination committee and of the inspectors of the qualifying examinations in medicine, surgery, and midwifery were presented, an important discussion took place[1] on a recommendation regarding the place of infant hygiene and diseases of children in these examinations. The recommendation finally adopted was "that in the final examination there should be a test of the candidate's knowledge of infant hygiene and of disease in children." In the original form the terms of the recommendation were more drastic—the word "always" was included, and the test was to be "both written and clinical"—but in deference to criticism these terms were dropped out of the final resolution. The final form, although vague, is really as comprehensive as the original draft, and it opens the way for further advance in medical teaching. In this recommendation the General Medical Council may be said to have granted a new and enlarged charter to pædiatrics. This advance has been gained by the special study of the subject going on all over the world, and by the growing conviction of its importance in medical practice. In this country the General Medical Council has watched and fostered the extension of teaching of the subject since its resolutions on medical education in 1922, and the resolution of 1932 is largely due to the concentration and pertinacity of the inspectors. Both in their individual and general reports they have insisted again and again, and in strong terms, on the importance in medical practice, and therefore in medical teaching, of the two aspects of health and disease in children. Dr. J. S. Fairbairn and Dr. Wardrop Griffith, whose names appear in the printed reports, now bound up in a volume,[2] as the inspectors in midwifery and medicine who visited the medical schools of Great Britain and Ireland from 1930 to 1932, were dealing with the qualifying examinations in these subjects and not with the teaching. They commented adversely upon the rare appearance of questions about children in the written papers, and upon the almost entire absence of infants and children in the clinical material presented to candidates at examinations. And their recommendations were much stronger than that of the examination committee, for they asked for a separate written paper, and a special clinical examination, to be conducted by those engaged in the teaching of pædiatrics. But their far-reaching proposals really lie hidden in the womb (as Dr. Fairbairn might say) of the 1932 resolution; and in the fullness of time they will be brought forth.

There is a good deal of misunderstanding and confusion as to what is meant by "infant hygiene," although the term "diseases of children" seems clear enough. To make matters worse, these subjects are presented to us in the inspectors' reports as minor appendages of the great subjects of midwifery and medicine. But they are in fact not separate subjects, but parts of one subject: the clinical study and management of children in health and disease. The subject "diseases of children," as taught here and all over the world, and as presented in medical text-books, has always included both aspects of the subject; but it is taught in hospitals for sick children, and as the time allotted is short the clinical teaching is largely concerned with disease. Dr. Fairbairn's plea for more teaching in the care and feeding of young infants at maternity hospitals therefore deserves serious attention; for it is only in maternity hospitals and in postnatal clinics for infants that the necessary clinical material of healthy infants is available. The subject, although one and undivided, can only be completely and practically studied in two separate institutions. The term "infant hygiene" is misleading, partly because British medicine has never taken kindly to the word hygiene. "Pædiatrics" is better; its meaning covers the whole subject, but it too has a strange and foreign sound about it. Dr. Fairbairn wishes the teaching of midwifery and infant hygiene to be linked together: we should then have "obstetrics and pædiatrics," an unpleasant conjunction of sounds—"jangled, out of tune, and harsh." The University of Edinburgh has chosen for the subject the title "child life and health," which is good English and includes in a simple phrase the two parts of the subject, health and disease, in their broadest sense. While no doubt the name of the subject will be determined by usage, it should express the unity of this large and important subject; as the side of health (or hygiene) is bound to play a large part in its development, it would be well for the word health to appear in the title.

A discussion which began with examination went on to the more important question of teaching. There is no use in calling for a stricter examination in what is called infant hygiene, as well as in diseases of children, if the time allotted for teaching is not extended. And probably the demand for more thorough examination will have a more immediate and beneficial reaction on teaching than on the actual examination test. The average time allotted to the teaching of this subject in Great Britain and Ireland is about 60 hours, a period much shorter than in the American schools. It is possible in that time to cover a good deal of ground by means of lectures, but not to familiarise the student with the clinical examination of sick and healthy children. The British Pædiatric Association with wise prescience debated the whole subject, both of teaching and examinations, at their last annual meeting, and sent to the General Medical Council four unanimous resolutions, corresponding in their general tenor to those of the inspectors, although expressed in more cautious and peacefully persuasive terms. The Association concentrated their attack at the examination end, and their resolutions no doubt contributed to the advance secured at the November council meeting. The Association will now be well advised to direct their attention to the courses of instruction, and to take full advantage of the opportunity given by the General Medical Council to revise and extend the teaching. A door has been unlocked; it is for the teachers in pædiatrics, by tact and patience and judicious pressure, to get the door open.

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[1] See THE LANCET, 1932, ii., 1276.

[2] Addendum to the Minutes of the General Medical Council for 1932. Reports of the Inspection of Qualifying Examinations 1930-32. London: Constable and Co. Pp. 700. 10s.

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AEROPLANES AND YELLOW FEVER

FASTER transport may bring us nearer to our neighbours, but it also brings us nearer to our neighbours' diseases. The development of long-distance flying and regular air routes has opened up obvious possibilities of the introduction of disease by air, and of late years the medical profession in this country has been invited by a number of writers[1] to consider the problems likely to arise. The danger is twofold. Either the time taken in transit may be so much reduced that a person may arrive in a country while incubating a disease which would normally have developed during the journey; or, where diseases are spread by animal vectors, the mosquito, fly, tick, or even rat in question might be conveyed to a fresh area safely and rapidly by aeroplane or airship. The second possibility has received some support from experiments carried out in the transportation of mosquitoes by air between Miami (Florida) and San Juan (Porto Rico).[2] Out of about thirty marked insects liberated in the cabin of a large passenger aeroplane from 3 to 13 in the different experiments were recovered alive at the end of ten-hour journeys of 1250 miles, with three stops, at which crews were changed and passengers and baggage were transferred.

In the case of Great Britain, with the possible exception of virulent small-pox, the danger of a serious epidemic from the introduction by air of cases or vectors of any of the major infectious diseases is at present almost negligible; but it is far otherwise with large areas in the tropics. Malaria, plague, cholera, and above all yellow fever, have here to be considered; and it is especially in connexion with the last-named that fears have been expressed. Calamities are prophesied if the disease is taken from West to East Africa and thence into India,[3] and Sir MALCOLM WATSON is not alone in holding the alarming views which he expressed at the last meeting of the industrial advisory committee of the Ross Institute. The grounds for apprehension are indeed far from negligible. They include: the ubiquity of the mosquito vector, *Aedes ægypti*, and the fact that several other species are potential vectors, at any rate under laboratory conditions; the presence of a huge susceptible animal reservoir in the rhesus monkey; the highly infective character of the virus and the fatal nature of the disease; and the existence of areas in which the disease is latent among the native population. Fortunately, however, there are also several factors militating against an epidemic spread by these means, and they are well summarised in a report drawn up by Colonel S. P. JAMES, which was submitted by the Yellow Fever Commission to the Office International d'Hygiène Publique last October. Yellow fever, the Commission say, is transmitted only from actual human cases in the first three days of the attack; the incubation period does not exceed six days; the agent of transmission is a domestic mosquito which remains in, or in the immediate vicinity of, the house where it has fed, and the insect, after feeding upon an infected case, must survive for 12 days or more before it can transmit the virus to another person. Lastly, it is held that "if there is adequate knowledge of where and when the disease occurs there is little or no difficulty in getting rid of it." Apart from these natural safeguards, important steps have been taken by the League of Nations Health Organisation and the various governments concerned to minimise the risk of spread. The subject has been under the consideration of the Office International d'Hygiène Publique for some years,[4] and last November a League of Nations conference of government health departments was held at Cape Town, where agreement was reached about the measures to be taken, and the early adoption of the International Sanitary Convention for Aerial Navigation by the various African governments concerned was unanimously recommended.[5] The regulations for yellow fever are strict and embody several departures from precedent. For instance:—

> "Signatory countries where yellow fever may exist will not rest content to await the appearance of typical cases but agree to take steps for searching out unrecognisable cases of the disease by biological methods and, if it is present, for defining its geographical distribution: also measures for preventing spread by aerial traffic shall be taken primarily before departure from those areas where the disease exists and only secondarily at ports of arrival; such measures include the requirement that crews and passengers shall have been free from any risk of infection during six days before embarkation and that the aircraft and cargo shall be free from the possibility of conveying mosquitoes. In addition countries which are infectible but not infected may refuse to permit the entry of aircraft from infected countries provided they report the reasons for the prohibition."

It seems clear, therefore, that the sanitary authorities of the countries concerned are fully aware of the dangers and have given them much thought. But of course the International Sanitary Convention for Aerial Navigation has yet to be ratified and brought into effective operation.

Fortunately a further safeguard may soon be in our hands. The use of vaccines and sera received a great stimulus from the discovery that monkeys and white mice were susceptible under certain conditions, and although the first results obtained from the use of vaccines containing killed or attenuated virus to produce immunity were disappointing, the simultaneous injection of biologically modified mouse-virus and immune serum seems to have given promising results in the hands of Sawyer, Kitchen, and Lloyd.[6] Obviously the power of conferring immunity from yellow fever on those passengers or airway personnel exposed to risk would allow considerable modifications in the somewhat irksome restrictions laid down by the proposed Sanitary Convention.

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[1] See, for example: Holden, O. M., Jour. State Med., 1931, xxxix., 457; Rawlinson, E. G., THE LANCET, 1932, i., 111; and Massey, A., Epidemiology in Relation to Air Travel. London: H. K. Lewis and Co., Ltd. 1933. Pp. 68 and 5 maps. 7s. 6*d*.

[2] U.S. Pub. Health Rep., 1931, xlvi., 1515.

[3] See THE LANCET, 1929, i., 194.

[4] Ibid., 1931, i., 315.

[5] Ibid., 1932, ii., 1445.

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THE RADIOGRAPHY OF CONGENITAL PYLORIC STENOSIS

The clinical picture of pyloric stenosis in infancy may be such as to leave little room for doubt. In the typical case there is projectile vomiting, usually beginning between the second and sixth weeks of life, associated with wasting, constipation, and visible peristalsis; while the presence of a *palpable tumour—a sign to which most experienced* observers pay great attention—will almost certainly clinch the diagnosis. At the same time it seems likely that mere spasm may closely simulate a true hypertrophy, while on the other hand any one of the classical features of the condition may be absent. Thus vomiting may be infrequent and not projectile; gastric peristalsis may not be conspicuous and may be visible only after repeated examinations; and the stools are sometimes normal or even diarrhœal. It is in cases of this type that accessory means of diagnosis will be especially valuable, since it is important to have an early decision and it is clearly undesirable to operate when there is no hypertrophy.

Radiography is not yet widely used in the diagnosis of this condition, but it has warm advocates. Dr. Eric Pritchard,[7] indeed, goes so far as to say that in deciding whether operation will be needed he attaches more importance to the X ray appearance after an opaque meal than to the size of the tumour felt on palpation, projectile vomiting, visible peristalsis, or obstinate constipation. Though most clinicians would not be prepared to endorse this opinion, there is certainly increasing evidence that radiological examination may be of real value. In carrying it out the general practice is to give 80 c.cm. or more of the opaque meal by means of a spoon or tube, and importance has been attached in diagnosis to such secondary symptoms as retention of the whole or greater part of the meal in the stomach for three hours or more, excessive peristalsis, dilatation either of the pyloric antrum alone or of the whole stomach, hypertrophy of the muscle wall of the stomach, and antiperistalsis. Dr. T. Meuwissen and Dr. J. P. Slooff[8] now, however, describe a different technique which they consider more reliable than many of the others adopted; they have used it in examining the stomachs of normal infants as well as those with symptoms of hypertrophic pyloric stenosis. The infant was kept without food from midnight, and in the morning any secretion or air present in the stomach was removed by means of a duodenal tube or a Nélaton catheter No. 18. (The amount of secretion was usually found to be small, and remains of the last meal were present only in a few cases of established stenosis.) Three cubic centimetres of a thin barium meal (100 g. barium sulphate in 150 c.cm. water) was then given through a tube, and spread over the whole stomach area by moving the child. Radiograms were taken dorsiventrally in the vertical and lying positions, and a further 20–30 c.cm. of a thicker barium meal (100 g. barium sulphate to 100 c.cm. water) was passed through the tube. By compression an attempt was made to fill the pyloric canal, which was always found to be lengthened in cases of hypertrophy. Six to ten radiograms were then taken of the canal in the dorsiventral or first oblique position—the rays passing from the left posteriorly to the right anteriorly—according to the position in which it showed best. The distance of the tube from the plate was 70 cm., and of the child from the plate 10 cm. After this the barium was as far as possible washed out from the stomach.

Meuwissen and Slooff think that whereas the relatively large meals previously used will greatly alter the position and shape of the stomach, 3 c.cm. of their barium mixture will hardly alter it at all, though it gives a clear outline of the organ. Likewise the giving of large meals is likely to distort the picture because of the swallowing of air. In the examination of a considerable number of normal infants by their method, it appeared that the stomach usually lay in the left hypochondrium and extended somewhat beyond the midline; the axis generally ran in an oblique direction from the left above to the right below, but was sometimes horizontal. When the stomach was fuller, the axis altered and became curved. In all the infants examined, however, the organ showed no fixed form: indeed differences were noted when the same child was examined a second time. With the 3 c.cm. meal the stomach seemed small, and even in the cases of stenosis it was never possible to demonstrate dilatation. In these last the pyloric canal was found to be sharply differentiated from the adjacent stomach margin, and in only one (where the hypertrophy appeared to be slight and operation did not prove necessary) was the transition gradual. The canal appeared radiologically as a needle-like shadow, which could be distinguished from the duodenum when the latter began to fill, and which was four to five times longer than normal. Retention of the meal in the stomach was not found to be a reliable index of stenosis, and similarly there was little evidence of excessive peristalsis. After operation the canal was funnel-shaped, and this appearance was observable for some time after symptoms ceased. From this it is concluded that the muscle was still in spasm, although the stenosis had been cured, and in one case the symptoms are interpreted as indicating that hypertrophy was secondary to spasm. Meuwissen and Slooff distinguish two types of spasm of the pyloric sphincter—one which gives rise to hypertrophy and one which does not.

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[6] Jour. Exper. Med., 1932, lv., 945.
[7] Post-Grad. Med. Jour., December, 1932, p. 464.
[8] Acta Pædiat., 1932, xiv., 19.

ANNOTATIONS

SHOCK AND ANÆSTHETICS

SHOCK, especially of the kind called secondary, may fairly be regarded as the chief bugbear of the surgeon who carries out extensive operations. Since the day when Lister made clear the nature and origin of septic complications, experience and continuous development of technique have brought surgeons to the point where they may justifiably claim that sepsis is preventable. Not so shock. For this condition we have no equally definite idea of causation and therefore no equally definite methods of prevention or treatment. In his Arris and Gale lecture before the Royal College of Surgeons of England on Feb. 15th, Prof. R. J. S. McDowall defined shock in animals as "the state which results from a fall of arterial blood pressure which if severe may lead to death from oxygen want." Its onset, he said, may be preceded by a compensated or even overcompensated stage in which the body succeeds in maintaining the blood pressure against the forces which would cause it to fall. This definition—better from a physiological standpoint than a clinical one—gives no indication how the fall in blood pressure may be supposed to originate. Prof. McDowall, however, pointed out that this may be from heart failure, from loss of blood, from an undue opening-up of vessels which are normally closed, or from a reduction of peripheral resistance. Shock may also be caused by violent stimulation which exhausts the vasomotor centre; in fact many regard this as the usual mode of onset of primary surgical shock. This is the kind of shock which is prevented on the operating table by deep anæsthesia. It is the relationship of anæsthetics to deferred shock which is less obvious and at the present day more important. Here the shock is apparently produced chemically by the action of histamine and similar bodies, and it seems certain from experimental evidence that ether and probably other anæsthetics sometimes make recovery from the histamine bodies impossible when it might have taken place in the absence of the anæsthetic. This incriminates anæsthetics in delayed surgical shock in the manner insisted upon by Finsterer of Vienna. Ether is believed to produce its depressing effect by dilating blood-vessels and rendering them more permeable; its action is masked at the time of operation by the stimulating nature of the drug.

It is plain that if these contentions are correct then the greater the damage which the patient suffers—in other words, the more extensive his operation, and the greater his exposure to histamine poisoning—the greater is the need for avoiding any addition of the effects of ether or the like to his histamine-loaded system. Nitrous oxide has been shown by Dale not to increase the susceptibility of an animal to histamine shock in the way that ether does. Prof. McDowall was of opinion that the future would see a greatly extended use of local anæsthetics for patients exposed to these risks. Spinal anæsthesia did not, he said, meet the case, because it interferes with nervous control of the vessels and also causes vasodilatation. He maintained also that concussion of the vasomotor centre is a more common cause of shock than is usually supposed. It may be produced experimentally by simply jarring the head. The importance of acapnia in relation to shock seems to lie chiefly in the fact that it reduces the activity of the vasomotor centre by which the body attempts to compensate for a fall of blood pressure.

POPULATION PROPHECIES

THE factors which produce changes in the quantity and quality of human populations are numerous and complex. It seems to be possible, by stressing one or other of these factors at the expense of the others, to justify any blend of optimism and pessimism about the future. The first World Population Congress was held at Geneva in 1927, when the world was in the middle of a boom, and the dominant note was optimistic. A second conference, held under the auspices of the International Union for the Scientific Investigation of Population Problems, took place in June, 1931, in London and, doubtless in response to the prevailing economic depression, the dominant note was pessimistic. The proceedings of this second conference have now been published.[1] The speakers were not hampered by the restrictions which partially stultified the former one, when discussion of the medical and sociological aspects of birth control was vetoed. This subject now received careful attention from several speakers of different nationality. Moreover, the later conference differed in yet another respect from its predecessor. By several speakers at the 1927 conference, notably by Dr. E. M. East, fears were expressed of the consequences of imminent over-population throughout the world. Dr. East drew an alarming picture of the effects upon Europe, wherein lived some 80–85 million persons depending upon imported food, of the reduction to nil of surplus food for export from food-exporting countries—Canada, Australia, and the Argentine—by reason of the increase of their own populations. But at the 1931 conference the emphasis was laid not upon the dangers of over-population in Western Europe, but upon the appalling prospects of an imminent depopulation in this area. Thus Dr. Eugen Fischer, commenting upon a table showing the decrease in the average size of completed families of certain classes in Germany between 1879–1910, remarks that "these few figures clearly indicate the condition of the people. It is that of a moribund community." Dr. Louis I. Dublin considers it to be not improbable that the population of the United States will reach a maximum of 148 millions in 1970, and that it will then halve itself in the course of the next 60 years. Prof. Fernand Baudhuin, speaking of the future of France and Belgium, says: "in any case, the peoples to which we belong will suffer the consequences of the policy they are now putting into practice; they are probably destined to disappear, or to be absorbed by newcomers." This authority draws a graphic picture of a new Western invasion by Slav races, first by Poles, and then by Russians, in the measure that the Latin countries become depopulated. And Prof. J. W. Gregory holds that the recent restrictions on immigration into under-populated and undeveloped countries, such as Australia, are likely to prove more harmful to the immigrant than to the emigrant countries—a very different prognostication from that delivered by Dr. East four years previously in Geneva. Relieving the pessimistic utterances of these and other speakers (who seem to regard human vital statistics, represented by curves on plotted charts, as inevitably destined to continue in the directions they have already taken, as do the curves made by the heavenly bodies in space) is the voice of Prof. F. H. Hankins of Smith College, Massachusetts. He effectively criticises the fatalism of Prof. Gini's "parabola of evolution," and points out that because human reproductive habits have taken a certain course in the very recent past, it does not necessarily follow that they will continue to take the same course in the future. "There seems to be no reason," he writes, "to doubt the possibility of a restoration of the birth-rate when and if the cultural opportunity develops."

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[1] Problems of Population. Being the Report of the Proceedings of the Second General Assembly of the International Union for the Scientific Investigation of Population Problems. Edited by G. H. L. F. Pitt-Rivers, B.Sc. Oxf. London: George Allen and Unwin, Ltd. 1932. Pp. 378. 15s.

No thinking person can doubt the fundamental importance of population problems. Doubtless at the next conference, new notes and prophecies will be sounded. The factors affecting human births, deaths, and food-supply are all capable of sudden and dramatic change. The elaboration of a simple, reliable, and fool-proof contraceptive, the outbreak of a new and uncontrollable epidemic disease with a selective racial incidence, or the discovery of an organism capable of converting cellulose into assimilable carbohydrate, or indeed many other occurrences psychological as well as physical, might well stultify the prognostications of all existing authorities on population, and hopelessly distort their curves.

BRONCHOSCOPIC SPIROMETRY

A FURTHER stage in work on respiratory function and efficiency tests has been reached in Stockholm where H. C. Jacobæus, P. Frenckner, and S. Björkman have devised an ingenious method of connecting each lung separately to a spirometer. In a preliminary report[1] they sketch the steps which led to their use of a special type of bronchoscope (the Chevalier Jackson type) with a calibre of 7 mm. and a length of 45 cm. The proximal end was closed by a detachable hollow stopper of the same lumen as the bronchoscope and fitted proximally with an obliquely placed glass window. A few centimetres from the proximal end of the bronchoscope was an outlet for air of the same calibre as the rest of the tube. The distal, cylindrical part of the bronchoscope was enclosed by a circular, closely fitting rubber cap about 1 cm. broad. Into this cap opened a fine canal, running along the whole length of the bronchoscope, intended for inflation of the rubber cap. Before each examination a test was made of the pressure required for obtaining with the rubber cap a reliable air-tight closure of a lumen, the size of a bronchus. From a technical point of view the most difficult detail of procedure employed seems to have been placing the distal end of the bronchoscope in exactly the right place, since the distance between the bifurcation of the trachea and the origin of the bronchus of the upper right lobe is only about 2 cm. and it is obviously of great importance that the rubber cap when inflated should not obstruct this bronchus nor interfere with the trachea. An air-tight junction effected with the distal end of the bronchoscope in exactly the correct position meant that the lung under investigation could be connected to a respiratory spirometer of the Knipping pattern.

An attempt was made to determine the volumes of the two lungs simultaneously yet independently of one another. For this purpose a bronchoscope made as already described was enclosed by a second bronchoscope tube reaching from the proximal end of the former to about 10 cm. from its distal end, of such a calibre that the air volume passing between the two tubes was exactly equal to that passing through the inner tube. The distal cylindrical end of the outer tube was also enclosed by an inflatable rubber cap and from the proximal end an outlet tube was constructed to allow the same volume of air to pass per second as through the inlet of the distal end. This double bronchoscope was passed down the trachea so that the distal end of the inner tube was in the correct position in one of the main bronchi and both rubber caps were inflated, sealing one lung to the inner bronchoscope and the other lung through the obstructed trachea to the outer bronchoscope. The lung volumes, including residual air, for both lungs together was first investigated without a bronchoscope, and then the spirometry of the separate lungs was carried out after bronchoscopy. Obviously the operative interference must have a considerable effect upon the respiratory function and any consideration of oxygen consumption, for example, of the lungs separately would be open to serious criticism. In all 11 patients have so far been studied in this way and the sum total of the measurements for the left and right lung as obtained by the method here described agreed surprisingly well with the respiratory volume for the two lungs taken together. Where pathological conditions of the lungs were present X ray examination was also carried out and attempts were made to correlate the findings for "broncho-spirometry" with the radiographic appearances. A certain lack of conformity between them can probably be explained by the spirometric methods being still in the experimental stage. Further work on these lines may well prove useful.

HUMAN BLOOD GROUPS IN EVIDENCE

THE medico-legal implications of the present knowledge of the human blood groups were discussed at a meeting of the Medico-Legal Society, held under the chairmanship of Lord Riddell, on Feb. 23rd. Dr. S. C. Dyke pointed out the confusion arising from the existence of the conflicting numerical nomenclatures of Jansky and Moss, and put in a plea for the adoption of nomenclature according to agglutinogen content of the red cells, as suggested by the public health committee of the League of Nations. He drew attention to the importance of the blood groups in civil legal practice for the demonstration of non-paternity, and in criminal practice in the identification of blood stains. The original law of von Dungern and Hirszfeld that the agglutinogens A and B cannot appear in the offspring unless present in the parents still, he said, holds good. The theoretical considerations introduced by Bernstein and Furuhata limit even further the possibilities of group inheritance, but which of these views is accepted makes no difference in so far as the actual possibilities of group inheritance are concerned. The identification of the M and N agglutinogens by Landsteiner and his co-workers narrows the field in cases of disputed paternity; the discovery of the P agglutinogen might in the future take the matter even further. Dr. G. Roche Lynch pointed out that, in a case of disputed paternity recently before the Danish courts, Prof. O. Thomsen had given evidence on the basis of the M and N agglutinogens that the defendant could not be the father of the child in question; on the advice of the Danish Medical Association, however, the evidence was not allowed to weigh conclusively against other evidence, and the defendant lost. Dr. Dyke agreed that the state of knowledge of M and N agglutinogens did not justify the acceptance of such evidence as conclusive at present, though in the future it might be accepted; even now knowledge of the A and B agglutinogens was sufficient to justify the acceptance of evidence depending on these factors against circumstantial evidence. It was difficult to secure serum and red blood-cells of known groups A and B, and he hoped for the establishment of a roster of individuals of known groups whose blood might be available for medico-legal purposes. Until such a roster was available the issue in forensic work might always be clouded by doubts of the credentials of the reagents used. Dr. Dyke expressed the opinion that evidence on the blood groups given by medical witnesses called by counsel on opposing sides might merely serve to confuse the jury, and suggested that the test might be performed by order of the court by an entirely unbiased expert with no connexion with either side. Dr. F. C. Martley described his method of identifying the group of blood stains by absorption of the agglutinins from a Group O serum. Dr. Roche Lynch gave an interesting account of the identification, in the case of the "city typist" murder, of a blood-stained razor found on the top of a bus as the weapon with which the murder had been committed. The group of the blood of the murdered girl and of the blood stain on the razor was AB; the rarity of this group in the general population served as powerful evidence for the assumption that the bloods were identical. There seems to be no doubt that blood grouping has a definite place in medico-legal investigations which is likely to become even more firmly established in the future.

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[1] Acta Med. Scand., 1932, lxxix., 174.

INFRA-RED MICROSCOPY

SIGHT and sound are not negligible because they are outside the perceptive range of the human retina or the organ of Corti. The infra-red rays thrown out by hills and trees are long enough to evade the obstacles of mist and fog and to reach the sensitised photographic plate although such rays are invisible to the unassisted eye. During the last few months infra-red photographs published in the daily press have kept us in touch with what the heights of Hampstead and Highgate would look like were our domestic chimneys not belching forth smoke, and what Burnley and Blackburn would look like were it not for the unburnt products of manufacturing fuel. These photographs reveal the landscape as it would be if we could see through the encircling gloom, and one may hope for the time when the retina can be sensitised in the same way as the photographic plate. The foreshadowed application[1] of infra-red photography to medicine is proceeding apace. Dr. S. R. Gloyne and his chief laboratory assistant, Mr. A. W. Smart, have been ingenious enough to see if it will enable them to avoid the amorphous dark pigment, so often seen in microscopic sections of lungs, and to reveal the nature of the asbestosis body. The results are shown in a series of photomicrographs in the February number of *Tubercle*, from which it is quite evident that the infra-red plate picks out certain structures and ignores others. How far the differences may be due to the alteration of focus by the infra-red filter—and of course the visual control of focusing is lacking—Dr. Gloyne leaves open for the moment. It is now well known that carbon in the atmosphere is not penetrated by infra-red rays and probably the same is true of carbon particles in lung tissue; but there are other foreign bodies in the asbestotic lung, to which the infra-red reacts differently, and the various stains used by the histologist also produce different reactions. Infra-red rays certainly penetrate thick sections better than do light rays, and their use opens up possibilities in the photomicrosc of dense structures such as pneumoconiotic lu The British Journal Photographic Almanac[2] 1933 gives some striking examples of what can done with infra-red plate and filter.

MILK GRADING IN THE UNITED STATES

Prof. G. S. Wilson[3] has lately given a deta account of the system of grading milk in the Un States of America, which he has studied on the s While many different arrangements are set the most interesting part of his report is a descrip of, and critical comparison between, the two n administrative procedures—the permit system procedure by milk ordinance.

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[1] Amer. Jour. Med. Sci., February, 1933, p. 223.

[1] New Eng. Jour. of Med., Jan. 26th, p. 177.

INFRA-RED MICROSCOPY

SIGHT and sound are not negligible because they are outside the perceptive range of the human retina or the organ of Corti. The infra-red rays thrown out by hills and trees are long enough to evade the obstacles of mist and fog and to reach the sensitised photographic plate although such rays are invisible to the unassisted eye. During the last few months infra-red photographs published in the daily press have kept us in touch with what the heights of Hampstead and Highgate would look like were our domestic chimneys not belching forth smoke, and what Burnley and Blackburn would look like were it not for the unburnt products of manufacturing fuel. These photographs reveal the landscape as it would be if we could see through the encircling gloom, and one may hope for the time when the retina can be sensitised in the same way as the photographic plate. The foreshadowed application[1] of infra-red photography to medicine is proceeding apace. Dr. S. R. Gloyne and his chief laboratory assistant, Mr. A. W. Smart, have been ingenious enough to see if it will enable them to avoid the amorphous dark pigment, so often seen in microscopic sections of lungs, and to reveal the nature of the asbestosis body. The results are shown in a series of photomicrographs in the February number of *Tubercle*, from which it is quite evident that the infra-red plate picks out certain structures and ignores others. How far the differences may be due to the alteration of focus by the infra-red filter—and of course the visual control of focusing is lacking—Dr. Gloyne leaves open for the moment. It is now well known that carbon in the atmosphere is not penetrated by infra-red rays and probably the same is true of carbon particles in lung tissue; but there are other foreign bodies in the asbestotic lung, to which the infra-red reacts differently, and the various stains used by the histologist also produce different reactions. Infra-red rays certainly penetrate thick sections better than do light rays, and their use opens up possibilities in the photomicrosco of dense structures such as pneumoconiotic lun The British Journal Photographic Almanac[2] 1933 gives some striking examples of what can done with infra-red plate and filter.

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[1] Amer. Jour. Med. Sci., February, 1933, p. 223.

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ASCORBIC ACID AS VITAMIN C

In the story of the vitamins history tends to repeat itself. This is perhaps not surprising since these substances have at least one great property in common, the property of exercising their beneficent influence in extremely small quantities. In fitting cholesterol and carotene into their proper niches in the story, the same question arose: "Is cholesterol capable of activation by ultra-violet light to form vitamin D, or does this property belong to a contaminant?" and "Is carotene capable of acting as provitamin A or is vitamin A itself present as a contaminant?" The final verdict was not the same in the two cases: cholesterol was pronounced impure and itself inactive, being contaminated with the active ergosterol; carotene was declared pure and uncontaminated and itself active. Hexuronic acid now stands where carotene and cholesterol stood, and what will the answer be to its claim to be itself the antiscorbutic vitamin? Is the verdict to be pure or impure? Prof. A. Szent-Györgyi, the discoverer of hexuronic, which he now prefers to call ascorbic acid, is himself in no doubt, for, speaking of the antiscorbutic vitamin, he says: "To-day this substance can be bought at a relatively low price, neatly sealed in tubes in the form of beautiful white crystals."[3] The greater part of the rest of informed opinion seems to agree with Szent-Györgyi in his claim that ascorbic acid is the vitamin.[4] One of the most experienced workers in the field, Dr. S. S. Zilva, however, is not convinced, and his objections must carry weight.

Szent-Györgyi first prepared ascorbic acid from adrenal glands, but the supply of these was limited and the yield of ascorbic acid too low to provide material for an exhaustive study. Again history repeats itself; just as vitamin A defied isolation in anything approaching a state of purity until the comparatively weak cod-liver oil was replaced, as the raw material, by the enormously much more potent halibut-liver oil, so now the investigation of ascorbic acid can advance with a bound, with the discovery that a Hungarian red pepper (*Capsicum annuum*) contains ascorbic acid in very large quantities and in a state which makes purification easy. A pound of ascorbic acid has thus been prepared, on which, with international coöperation, a chemical study has been made; so the evidence thus collected seems still to support ascorbic acid's claim to vitamin status.

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[2] Vie Méd., Dec. 25th, 1932.

[3] Nature, Feb. 18th, p. 225.

[4] Birch, T. W., Harris, L. J., and Ray, S. N.: Nature, Feb. 25th, p. 273; Dann, W. J.: Ibid; Waugh, W. A., and King, C. G.: Science, 1932, lxxvi., 630; Tillmans, J.: Zeits. f. Untersuch. d. Lebensmittel, 1932, lxiv., 11.

GENTIAN-VIOLET IN THE TREATMENT OF BURNS

The tannic acid treatment of burns is based on the theory that the symptoms associated with extensive lesions are due to the absorption of toxins from the damaged area. Dr. R. H. Aldrich[1] challenges this theory, and puts forward the view, on behalf of Dr. W. M. Firor, that the symptoms are a result partly of fluid loss, with a corresponding increase in concentration of the blood, and partly of sepsis, pure and simple. In an investigation of the bacteriology of burns they found that, for the first 12 hours, cultures taken from the burned areas were sterile, apart from occasional contaminating organisms such as *Staphylococcus aureus* and *albus* and *B. coli*; after that, in all severely burned patients, the beta-hæmolytic and gamma streptococcus could be grown in cultures taken from the wound. The concentration of the organisms increased with the obvious signs of sepsis and with the beginning of the so-called toxic symptoms in the patient, until at the end of 48 to 56 hours pure cultures of the streptococcus could be obtained; coincidently the patient showed the characteristic bad effects of burning. As gentian-violet is regarded as a specific antiseptic for this organism, Firor and his colleagues tried using a 1 per cent. solution of the dye as a dressing for burns, and claim excellent results. Without preliminary cleaning of the burned area the dye is sprayed on at two-hour intervals for the first few hours. No dressing is applied, but the raw surface is exposed to the air and protected by a cradle. A thin, tough, flexible eschar rapidly forms, and spraying is then only performed every four to six hours during the day; the treatment is continued until healing is complete. If the eschar shows signs of softening, the softened portion is removed and the underlying surface sprayed afresh. The originators of this treatment claim that analgesia is produced almost instantaneously, that loss of fluid from the burned area is prevented, and that if sepsis can be successfully avoided the characteristic signs of extensive burning—such as stupor, fever, delirium, and albuminuria—do not appear. Apart from the preliminary shock there is no great prostration, and the patient may even be able to get up. Aldrich quotes three cases of extensive burns in which this treatment produced admirable results, and a fourth in which the patient, a child of 9, who had lost over three-fifths of the skin area, died of cardiac failure after two months of encouraging progress.

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[1] New Eng. Jour. Med., Feb. 4th, p. 299.

FEDERATION OF THE HEALTH RESORTS OF FRANCE. The following medical tours will take place in the South of France during the Easter period. From April 10th to 18th there will be a tour of the Provence and Riviera districts, during the course of which visits will be paid to Marseilles, Aix-en-Provence, Les Baux, Arles, Cassis, La Ciotat, Hyères, St. Raphael, Cannes. From April 16th to 23rd there will be a tour along the Riviera, visiting Cannes, Antibes, Juan-les-Pins, Grasse, Venice, Nice, Mentone, Monte Carlo. The tours will be under the scientific direction of Prof. Imbert and Olmer, of the Faculty of Medicine of Marseilles, and Dr. Georges Baudouin of the Institute of Hydrology and Climatology at the Collège de France Information as to the cost of the tours may be obtained from the Secretary, Société Médicale du Littoral Méditerranéen, 24, Rue Verdi, Nice (A.M.). . . . .

SPECIAL ARTICLES

THE EFFECT OF PASTEURISATION UPON THE NUTRITIVE PROPERTIES OF MILK

BY WILLIAM G. SAVAGE, M.D. LOND., B.SC., D.P.H.
COUNTY MEDICAL OFFICER OF HEALTH, SOMERSET

(Concluded from p. 433)

Human Feeding Experiments

IN view of the very extensive literature dealing with infant and child feeding, it is noteworthy that there are scarcely any studies which are of use for a comparison of raw cow's milk and pasteurised cow's milk. The utility of cow's milk in infant feeding is universally accepted and practised. The peculiar value of milk as a growth stimulant for the young has been established by a number of special investigations, that of Corry Mann (1926)[36] being the most convincing. The problem whether this valuable food is diminished for the child by pasteurisation remains uninvestigated, probably for the very sound reason that heated milk has been so extensively used without any signs of detriment that the scientific investigator realises no call for special critical study.

In the following summary I have dealt with all the investigations I can find which have any bearing on this particular point, or which have been alleged to have a bearing.

Daniels and Stearns (1924)[37] carried out no feeding experiments with raw milk, but compared a few babies fed one group on a milk mixture pasteurised for 30 minutes at 145° F. in bottles, and the other group fed on milk mixtures brought quickly to the boil three times, taking eight minutes in all. They estimated the calcium and phosphorus retention in the two groups, and for the six infants studied they conclude "the calcium and phosphorus retention in infants fed on quickly boiled milk mixtures was considerably greater than it was when the milk mixtures were pasteurised." Their results in no way contribute to the question at issue. The food heated was not whole milk, but a mixture with cream, a carbohydrate (dextri-maltose or lactose), and water. It was a diluted milk and it may have reduced the calcium content to a dangerously low level. The calcium content of the diluted milk is not given. Their results do no more than suggest that prolonged heating may reduce the available calcium and phosphorus more than quick boiling.

Ladd, Evarts, and Franks (1926)[38] published particulars of feeding experiments with groups of children in foster homes. Dealing with infants in the first year of life the following are their main findings.

Group 1 babies (61 cases) fed on pasteurised milk without orange juice or cod-liver oil over a period of 6 to 9 months showed a percentage weight development from 82·1 at entrance to 83·8 at the end of the period, of expected weight increase. A second group of 59 cases, which had orange juice in addition, showed a percentage weight development from 82·2 at entrance to 90·1. A third group which had cod-liver oil and orange juice in addition to pasteurised milk gave percentage weight development from 80·2 to 89·7. A fourth group of 17 cases only, fed on certified milk (raw) without orange juice or cod-liver oil, showed a percentage weight development increase from 80·0 to 94·0.

In a certain number of cases periodical X ray examinations of the wrists were made at three-monthly intervals. In 17 cases of the certified milk group 13 showed no X ray rachitis at the beginning of the period of observation, but 3 of these developed mild rachitis. Of 12 cases fed upon pasteurised milk with cod-liver oil and orange juice 4 showed no X ray changes at the beginning, while the 8 which did show signs were healed or healing at the end of the period of observation. If "period of observation" includes at the beginning of feeding, obviously the two groups are not comparable while nothing can be deduced from these findings.

Since the certified milk is extremely high-grade milk from specially fed cows and the other ordinary milk of unknown quality called Grade A pasteurised milk, the comparison is valueless. The authors recognise this fallacy and point out:—

> "It is quite possible that the greater efficiency of certified milk over pasteurised milk is due to the more exact and scientific feeding of the cows in the particular supply of certified milk used and not to the quality of rawness."

Lewis (1929)[39] compared two groups of unselected children, all under 9 months and all entirely artificially fed. Group 1 consisted of 122 infants fed upon certified milk. Group 2 of 112 fed on pasteurised milk. The author found that the infants fed on certified milk made decidedly more progress than those fed on pasteurised milk, this being specially marked in the 0–3 months group. The occurrence of rickets was less noticeable in the certified group or, if present, it was milder. In every case—i.e., for both groups—the milk was *boiled* before feeding for two minutes. The author admits that the certified milk was "milk of superlative quality," while that pasteurised was ordinary milk. The chemical composition of neither milk is given. Obviously the work is useless to judge the effect of pasteurisation, but merely illustrates the nutritive superiority of certified milk.*

THE LANARKSHIRE EXPERIMENT

The milk-feeding experiment in Lanarkshire (Leighton and McKinlay, 1930)[42] was on a large scale and comprised 10,000 control children, 5000 given raw milk and 5000 given pasteurised milk. The milk used was Grade A (tuberculin tested) raw, and the same milk pasteurised. Heights and weights were the criteria used. The data germane to the present review are shown in Tables VI. and VIA.

While they show clearly the value of the milk ration in increasing height and weight, they are less valuable for comparing raw and pasteurised milk. The tables show that for boys at three age-periods there was greater weight increase with pasteurised milk, while at four age-periods it was the other way about. For the girls at two age-periods the pasteurised milk figures were higher, at four they were less, and at one practically identical. Taking into consideration differences which are significant the authors conclude:—

> "In so far as the conditions of this investigation are concerned the effects of raw and pasteurised milk on growth in weight and height are, so far as we can judge, equal."

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* Some apology is owing for quoting these three investigations as, whatever their merits on other grounds, they are wholly worthless as yielding any evidence on the nutritive effects of pasteurisation. It is necessary however to describe them since they have been mentioned in several scientific papers [e.g., Williams and Mattick (1931)[40] and Andrews (1933)[41]] as furnishing such evidence, and extensively quoted as part of the propaganda against pasteurisation.

confirmed by Levine. As regards treatment of the established condition, Dr. C. Morton Smith agreed with the view, generally accepted in England, that most reliance should be placed on potassium iodide and mercury, perhaps supplemented by bismuth intramuscularly. Arsenical preparations should be used cautiously if at all, and then only after a preliminary course of iodide. This caution applies particularly forcibly to cases with aortic regurgitation, since in them the coronary orifices are almost certainly narrowed, and any local reactionary swelling may produce complete occlusion and sudden death. This conception of the treatment of cardiovascular syphilis agrees very closely with that expressed by the majority of the contributors to a symposium lately published in France.[2]

ASCORBIC ACID AS VITAMIN C

In the story of the vitamins history tends to repeat itself. This is perhaps not surprising since these substances have at least one great property in common, the property of exercising their beneficent influence in extremely small quantities. In fitting cholesterol and carotene into their proper niches in the story, the same question arose: "Is cholesterol capable of activation by ultra-violet light to form vitamin D, or does this property belong to a contaminant?" and "Is carotene capable of acting as provitamin A or is vitamin A itself present as a contaminant?" The final verdict was not the same in the two cases: cholesterol was pronounced impure and itself inactive, being contaminated with the active ergosterol; carotene was declared pure and uncontaminated and itself active. Hexuronic acid now stands where carotene and cholesterol stood, and what will the answer be to its claim to be itself the antiscorbutic vitamin? Is the verdict to be pure or impure? Prof. A. Szent-Györgyi, the discoverer of hexuronic, which he now prefers to call ascorbic acid, is himself in no doubt, for, speaking of the antiscorbutic vitamin, he says: "To-day this substance can be bought at a relatively low price, neatly sealed in tubes in the form of beautiful white crystals."[3] The greater part of the rest of informed opinion seems to agree with Szent-Györgyi in his claim that ascorbic acid is the vitamin.[4] One of the most experienced workers in the field, Dr. S. S. Zilva, however, is not convinced, and his objections must carry weight.

Szent-Györgyi first prepared ascorbic acid from adrenal glands, but the supply of these was limited and the yield of ascorbic acid too low to provide material for an exhaustive study. Again history repeats itself; just as vitamin A defied isolation in anything approaching a state of purity until the comparatively weak cod-liver oil was replaced, as the raw material, by the enormously much more potent halibut-liver oil, so now the investigation of ascorbic acid can advance with a bound, with the discovery that a Hungarian red pepper (*Capsicum annuum*) contains ascorbic acid in very large quantities and in a state which makes purification easy. A pound of ascorbic acid has thus been prepared, on which, with international coöperation, a chemical study has been made; so the evidence thus collected seems still to support ascorbic acid's claim to vitamin status.

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[2] Vie Méd., Dec. 25th, 1932.

[3] Nature, Feb. 18th, p. 225.

[4] Birch, T. W., Harris, L. J., and Ray, S. N.: Nature, Feb. 25th, p. 273; Dann, W. J.: Ibid; Waugh, W. A., and King, C. G.: Science, 1932, lxxvi., 630; Tillmans, J.: Zeits. f. Untersuch. d. Lebensmittel, 1932, lxiv., 11.

GENTIAN-VIOLET IN THE TREATMENT OF BURNS

THE tannic acid treatment of burns is based o the theory that the symptoms associated wit extensive lesions are due to the absorption of toxi from the damaged area. Dr. R. H. Aldrich[1] cha lenges this theory, and puts forward the view, c behalf of Dr. W. M. Firor, that the symptoms a a result partly of fluid loss, with a correspondin increase in concentration of the blood, and partl of sepsis, pure and simple. In an investigation (the bacteriology of burns they found that, for tl first 12 hours, cultures taken from the burned are were sterile, apart from occasional contaminati organisms such as *Staphylococcus aureus* and *alb* and *B. coli;* after that, in all severely burne patients, the beta-hæmolytic and gamma strept coccus could be grown in cultures taken from tl wound. The concentration of the organisms increase with the obvious signs of sepsis and with the begi ning of the so-called toxic symptoms in the patien until at the end of 48 to 56 hours pure cultures (the streptococcus could be obtained; coincidentl the patient showed the characteristic bad effects (burning. As gentian-violet is regarded as a specif antiseptic for this organism, Firor and his colleagu tried using a 1 per cent. solution of the dye as dressing for burns, and claim excellent result Without preliminary cleaning of the burned area th dye is sprayed on at two-hour intervals for the fir few hours. No dressing is applied, but the ra surface is exposed to the air and protected by cradle. A thin, tough, flexible eschar rapidly form and spraying is then only performed every four t six hours during the day; the treatment is co tinued until healing is complete. If the esch shows signs of softening, the softened portion removed and the underlying surface sprayed afres The originators of this treatment claim that analgesi is produced almost instantaneously, that loss of flui from the burned area is prevented, and that if sepsi can be successfully avoided the characteristic sig of extensive burning—such as stupor, fever, deliriu and albuminuria—do not appear. Apart from th preliminary shock there is no great prostration, an the patient may even be able to get up. Aldric quotes three cases of extensive burns in which thi treatment produced admirable results, and a fourt in which the patient, a child of 9, who had lost ov three-fifths of the skin area, died of cardiac failu after two months of encouraging progress.

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[1] New Eng. Jour. Med., Feb. 4th, p. 299.

FEDERATION OF THE HEALTH RESORTS OF FRANC The following medical tours will take place in the Sout of France during the Easter period. From April 10th t 18th there will be a tour of the Provence and Rivie districts, during the course of which visits will be paid t Marseilles, Aix-en-Provence, Les Baux, Arles, Cassis, L Ciotat, Hyères, St. Raphael, Cannes. From April 16th t 23rd there will be a tour along the Riviera, visiting Canne Antibes, Juan-les-Pins, Grasse, Venice, Nice, Menton Monte Carlo. The tours will be under the scientific directio of Prof. Imbert and Olmer, of the Faculty of Medicine c Marseilles, and Dr. Georges Baudouin of the Institute c Hydrology and Climatology at the Collège de Franc Information as to the cost of the tours may be obtained fro the Secretary, Société Médicale du Littoral Méditerranée 24, Rue Verdi, Nice (A.M.). . . .

few children received no heated milk, so they were divided into the two following groups:—

A. Children who had received raw milk for more than half their lives.

B. Children who had received heated milk for more than half their lives.

There was practically no difference between the groups as regards average heights or as regards average weights. The average for Group A was 36·0 lb., and for Group B 36·3 lb. There were no differences in the financial status of the two groups. The authors conclude: "The growth-promoting capacity of heated milk plus the supplementary diet received by the average American child of 10 months to 6 years is not measurably less than the growth-promoting capacity of raw milk plus the supplementary diet received by the average American child of 10 months to 6 years."

The value of a statistical return combined in this way from many cities is not impressive. It does not deal with the most important group—children under 2 years of age. The children were weighed with only the outer garments removed. No information is available as to the other food taken, and the milk is only part, possibly a small part, of the total food intake. I do not think bulk statistics of this nature can help much in solving the problem of a slight nutritional change in one article of food when we are without any knowledge of the rest of the food intake. All that the report can be taken to show is that with a mixed diet in children aged 2–6 years these figures show no prejudicial effect from the substitution of heated for raw milk.

FEEDING WITH DRIED MILK

Dried milk is heated milk. When made by the roller drying process the temperature exposure period is only a few seconds, but the actual temperature reached is high as the temperature of the interior of the rollers is from 130° C. to 160° C. In vacuum-dried milk the temperature in the chamber is from 40–55° C., and in spray-dried milk it may be well above pasteurisation temperatures. There is probably some slight reduction of available calcium, and indeed Kramer, Ladzke, and Shaw (1928),[47] with five children aged 7–12 years, did find rather greater retention of calcium by the children with fresh milk than when supplied as dried milk.

At infant welfare centres and other places all over the country enormous quantities of dried milk have been regularly utilised for many years for infant feeding. Most of the officers of these clinics are nutritional experts and would readily notice any nutritional defects in infants so fed if they occurred. We get no such reports, and dried milk is found to be extremely satisfactory. Dried milk is not exposed to precisely the same temperature as pasteurised milk, but the chemical changes which occur are probably just as great if not much more considerable. The fact that for at least 20 years dried milk has been very widely used for infant feeding without the slightest evidence of nutritional loss or any lessened value to the infant is of considerable importance as showing that these very trivial chemical changes are not likely to be of much clinical significance.

Discussion

The basic fact in any consideration of the nutritive effects of pasteurisation on cow's milk as a food for the human child is that cow's milk is not a natural food for man at all, and its composition is based on the requirements of the calf. It is very far from being a perfect food for an infant, as is constantly recognised by physicians with their innumerable modifications to make it less unsuitable. The fact that anyone should dare to heat it, even if that heating considerably modified its composition, is not as such a crime, it may be a highly beneficial action improving its nutritive value for the child. There is nothing sacrosanct about the composition of cow's milk in relation to man.

When we study the ascertained changes caused by pasteurisation we find that they are very trivial. The diffusible calcium is reduced from 26 to 20 per cent. (as CaO), there is probably some loss of the minute amount of iodine present, and there is a reduction of the already inadequate amount of vitamin C. There is no evidence of any other significant changes. These changes are so unimportant that the opponents of pasteurisation are driven to suggest the presence of hypothetical substances in milk which might conceivably be of importance in nutrition, and which might possibly be damaged by heat treatment. These hypothetical possibilities have never materialised.

When we contrast cow's milk with human milk we find that the effect of pasteurisation is slightly to bring cow's milk nearer in composition to human milk as regards available calcium and phosphorus, and as such this heat treatment may be regarded as beneficial. For infant feeding pasteurised milk is a slight improvement.

As regards vitamin C, all experts regard cow's milk as an inadequate source of supply, so it is of no significance if this vitamin is diminished or not, since a supplementary supply is necessary whatever kind of cow's milk is supplied.

A study of the chemical changes and the composition of the two kinds of milk lends no support to the view that pasteurised milk is in any way inferior to raw cow's milk for infant feeding.

The animal experiments have been set out in detail, and it is evident that there is not the slightest evidence to invalidate the above conclusion. They may have some significance for animals with calcium needs above or equal to that of the cow but have none for human beings with relatively low calcium requirements.

When we turn to the human feeding experiments it is noteworthy that there are none which settle the nutritional effects of pasteurisation, and most of them have nothing to do with the question since the points at issue were never really investigated. We are left therefore with the immense volume of clinical experience in this country, in U.S.A., and elsewhere, showing that pasteurised milk has satisfied the needs of infant and child feeding over very many years and without any evidence of detrimental loss, provided (as for milk generally) any possible deficiency of vitamin C is made good. With this mass of clinical experience available it is for the opponents to demonstrate nutritional harm by pasteurisation, and the experimental work cited shows that this they have conspicuously failed to do.

While these facts apply with particular force to infants, the position as to older children may not be quite the same. Assuming as accurate that there is some small diminution in available calcium, and possibly of phosphorus, may it not be that this is not without effect as regards older children whose calcium-phosphorus requirements are not limited as they are for infants?

The needs for older children as regards calcium are considerable for bone formation, and Sherman (1927),[22] Bartlett (1931)[43] challenges this contention and by rearranging the age-groups slightly, and by paying special attention to the numbers in each group arrives at a different opinion. Dealing only here with his weight calculations these are shown in Table VII.

He concludes :—

> "In the light of these figures it seems impossible to conclude that raw and pasteurised milk are equal in their effect on growth in weight and height. It may be argued with truth that the actual differences in growth are small, but it must be remembered that the experiment only lasted for four months, and if a significant advantage for raw milk can be demonstrated in this short period, it will be evident that considerable differences may be expected in populations in the course of years or of generations."

TABLE VI.—*Average Increase in Weights (in Ounces) in the Three Groups*

Age.	Boys.			Girls.		
	Control.	Raw milk.	Pasteurised milk.	Control.	Raw milk.	Pasteurised milk.
5–	11·64	14·88	15·65	7·00	14·50	6·62
6–	13·75	13·51	9·96	11·21	10·61	10·05
7–	11·17	14·85	15·55	8·90	11·22	12·94
8–	11·38	14·21	15·21	9·77	13·40	13·37
9–	9·53	13·43	11·83	7·87	13·81	12·52
11–	7·10	13·53	10·39	9·51	15·08	18·96
12–	6·14	12·74	11·05	12·62	24·92	17·08

TABLE VIA.—*Average Increase in Heights (in Inches) in the Three Groups*

Age.	Boys.			Girls.		
	Control.	Raw milk.	Pasteurised milk.	Control.	Raw milk.	Pasteurised milk.
5–	0·75	0·95	0·94	0·86	0·64	0·87
6–	0·80	0·87	0·87	0·80	0·86	0·84
7–	0·76	0·87	0·82	0·75	0·84	0·81
8–	0·74	0·82	0·79	0·71	0·81	0·78
9–	0·69	0·80	0·74	0·66	0·76	0·78
10–	0·68	0·76	0·68	0·71	0·79	0·72
11–	0·69	0·74	0·70	0·77	0·86	0·81

Unfortunately the conditions of the experiment make it unjustifiable to draw any definite deduction from these very small differences. Milk was only an accessory for these children to the extent of three-quarters of a pint per day. No information is given, or probably was obtainable, as to the main part of their diet. The pasteurised and raw milk fed groups were not from the same school but the children in one school all received raw milk, in another all pasteurised. The home family conditions in the different schools may have been very different. The children were weighed in their indoor clothes, only less boots or shoes, and only to the nearest ounce, while since it extended from February to June the amounts of their clothes would fluctuate markedly. Bartlett's table shows that the raw milk gave an advantage of 1·36 oz. for each boy, 0·59 oz. for each girl, and 0·96 oz. for boys and girls together. With these variable factors an average difference of less than 1 oz. over a period of four months in rapidly growing children can hardly be considered of any significance although it is interesting.

TABLE VII.—*Average Increase in Weights (in Ounces) in the Three Groups*

Recalculated to increase the number of children in each group.

Age (years).	Boys.			Girls.			Boys and girls.		
	Control.	Raw milk.	Pasteurised milk.	Control.	Raw milk.	Pasteurised milk.	Control.	Raw milk.	Pasteurised milk.
5, 6, and 7 ..	12·38	14·25	12·77	9·92	11·00	11·32	11·15	12·67	12·04
8 and 9	10·48	13·80	13·45	8·81	13·60	12·95	9·65	13·71	13·19
10 and 11	6·73	13·20	10·68	10·77	19·13	18·17	8·75	16·18	14·39
Total of all ages	10·06	13·78	12·42	9·74	14·41	13·82	9·90	14·09	13·13

In this connexion it is worth noting that over the period of the experiment unemployment was rife and probably many of the children were underfed, and it is likely that there was considerable calcium deficiency in the home diet. This is probable from the work of Orr and Clark (1930)[44] in towns of Scotland. This point is considered further in the general discussion on this paper.

Sprawson (1932)[45] produces evidence that in certain institutions 40 children in one series showed no caries when he examined them at various periods subsequently, the average being about four years, while in a second series there were very few cases of caries. The children in the first series commenced the use of raw milk before 12 months old, and in the second between 1 and $2^7/_{12}$ years. He ascribes the relative freedom from caries to the use of the raw milk. In fact, however, the milk was not always given raw as it was given to the younger children "warmed," which may easily have been at temperatures equivalent to "flash" pasteurisation. He gives no comparable data dealing with pasteurised milk, and agrees that there is no exact knowledge whether or no effects comparable would result with pasteurised milk. He infers not, apparently from his mistaken idea that all children get a considerable milk ration during the first three or four years of life which is almost invariably sterilised by boiling or pasteurisation. This incorrect generalisation has evidently misled the author. This paper offers no evidence either way as regards the relative value of raw and pasteurised milk in preventing caries, but is a welcome contribution throwing light on the possible utility of milk as milk as a means of preventing dental caries.

Frank, Clark, Haskell, Miller, Moss, and Thomas (1932)[46] are responsible for a United States Report dealing with the nutrition of children fed respectively on raw and pasteurised milk. The statistics were compiled with the help of various State departments. The age-weight curves were plotted for 3358 children, and the age-height curves for 3319 children, all aged 2 to 6 years, and from a considerable number of cities. An insufficient number of returns were available for children under 2 years of age. Unfortunately, very

MEDICINE AND THE LAW

Heart Disease as an Accident

THERE is one more case to be added to the decisions which make the employer pay compensation as for an accident where a workman with a weak heart drops down dead at his work. No matter how diseased the heart may be, no matter how slight the strain imposed by the work, the law looks upon the combination of disease and employment as amounting to an accident. The man has tried to do something beyond his physical powers; he has miscalculated his strength; some part of his physical mechanism has given way, and this event is legally therefore an accident. A man of 46 with a diseased heart was working on a ship, loading bags weighing a hundredweight or more which were slung on board by a crane. He started at 6 in the morning, knocked off at 8 for breakfast feeling a little queer, and resumed work after breakfast. At 9.30 he gave himself a slight jerk and hurt a finger in trying to stop a line of bags from swinging. Nevertheless he went on working and presently, after a pause in the party's labours, he got up to strike a hook into a bag when he fell forward and died. Death was certified to be due to myocarditis and syncope. The case (Treloar *v.* Falmouth Docks) looked a simple one, very like previous cases where the employer has been held liable. For once, however, the county court judge went against the usual trend of decisions by holding that the injury was due to the disease and not to the employment. He said he was not satisfied that death resulted from anything the workman was doing in the course of his employment, and he was not satisfied that death was due to an injury by accident arising out of, and in the course of, his employment. The Court of Appeal, faced by this awkward finding of facts, ruled that there was no evidence on which the county court judge could find as he did; the death was contributed to by the ordinary course of the work. The judge had misdirected himself as to what constituted an accident in law. It was unnecessary to prove that there was any abnormal strain in the work which caused death. Therefore death was an accident arising out of the employment. On Jan. 30th the House of Lords agreed.

In 1929 the Scottish courts expressed a doubt about the extent of this doctrine. The Lord President of the Court of Session observed (in Millar *v.* Coltness Iron Co.) that he did not think the decision in Clover, Clayton and Co. *v.* Hughes would support so wide a proposition as that "any and every physiological breakdown in the workman's system, occurring while he is subjected to the stress of his ordinary duties," would support a claim under the Workmen's Compensation Act. Recent decisions in the House of Lords, however, show that a workman's death from heart disease during working hours will mean that the employers must pay. Heart disease is an accident against which they insure the workman. They must pay whether the man's health was previously good or bad.

"Discharged from the Dock" on a Medical Certificate

The allegations made by Scottish members in a House of Commons debate reported in our last issue (p. 448) should not be left where they stand. If no other inquiry is offered, a fresh Parliamentary opportunity can be made on a motion to reduce the salary of the Lord Advocate, who, when he returns to duty, will doubtless know how to defend actions for which he is officially responsible. In effect it is suggested that, in the Scottish Amalgamated Silks trial, rich persons implicated in a crime escaped from justice on an untrue medical certificate, one of them being "discharged from the dock" by this method. Is life as easy as this in Scotland? Are there not three stages? Not only must a venal doctor be bribed to sign a false certificate; in addition a venal prosecutor must be bribed to abandon the proceedings at sight of it, and a venal court must be bribed to permit the abandonment. If all these conditions were fulfilled, the administration of justice would indeed be in a desperate way. An English commentator must walk warily in the field of Scottish procedure. In the English courts, in cases of drug addiction, reckless driving, or shop lifting, or in any circumstances where mental instability is pleaded, medical evidence for the defence is certainly tested by the cross-examination of counsel for the prosecution and it is often rejected by the bench. In England, too, there survives, for what it is worth, some safeguard against the stifling of a prosecution inasmuch as anybody has in theory a right to prosecute, and a "voluntary bill" has in certain cases been submitted direct to the grand jury. In Scotland prosecutions are in the hands of public officers known as procurators fiscal. The Lord Advocate has a general responsibility for such duties as are discharged in England by the Director of Public Prosecutions; but ordinarily the decision to prosecute or not to prosecute is taken by advocate deputes in Scotland. It is easy to think of valid reasons why, when several persons are initially accused of a crime, some of them may not ultimately be placed on trial. Evidence against some may be inadequate—an important consideration where the charge is one of conspiracy. Or some may be released in order to assist the prosecution. Ill-health too may be an element, since, if several men are charged together, it would not be fair to postpone trial indefinitely till one of them recovered from illness. It is unfortunate that the allegations made in the House of Commons leave the public in doubt as to what really did happen. Until particulars are available and proper inquiry has been made, the suggestion of impropriety in the signing of medical certificates need not be taken too seriously. Every medical practitioner knows that not only he himself but the whole of the medical profession will be judged by the standard of truth in the certificates he signs.

Customs Offence by Doctor

Learned writers have classified offences as *mala in se* and *mala quia prohibita*. There is greater moral obliquity in doing something wrong in itself than in doing something which is merely wrong because it is forbidden. In the latter category revenue offences may be placed, and here the reprehension will be a matter of degree. The morning newspapers of Feb. 18th reported proceedings against a London doctor who had been summoned at Dover the previous day for attempting to evade customs duties. A representative of the Customs said the accused was bringing back surgical instruments from Germany. Asked in the usual way if he had anything to declare, he produced two gramophone records and two woollen articles. Asked if he had anything else dutiable, he answered in the negative. When 12 pipettes and two surgical needles were found in a suit-case, he said he had done wrong and should have declared them. He said he had nothing else dutiable, but on the back of the car which he had brought over on the boat was an autotonograph, an instrument quoting Herter, points out that there must be an average storage of about 37 g. of calcium annually for the years 3 to 16—i.e., an annual daily storage of about 0·1 g. Although calcium is abundant in many foods, there is in fact often an inadequacy in the diet of many poor children. It is probably the abundance of calcium and phosphorus in milk which makes it such a good growth stimulant for the child.

Mentioning but one paper, Sherman (1923)[48] *reports studies of 21 children aged 3–14 years, covering* a period of 417 experimental days. In the first series the children on ordinary mixed diet received 750 g. (about ¾ quart) of milk daily. On this diet they stored calcium in quantities approximately proportional to their body-weight. In the second series when the amount was increased to 1000 g. (1 quart) per child per day the rate at which the children stored calcium was materially improved.

Of course intake and retention are two different things, while the ratio of calcium to phosphorus is of importance, as Stearns (1931)[49] has shown, but generally a high calcium phosphorus intake is helpful.

The slight diminution in available calcium possibly may be a drawback to an older child on a diet inadequate in calcium, and over a long period might have some influence on growth magnitude. The effect is so small that it is not an argument of any weight against pasteurisation. Over a long period it might account for a slightly less weight increase, and the *difference of just under 1 oz. in four months*, as shown in the criticism of Bartlett, may be explainable on this supposition.

Summary

1. The known changes in cow's milk produced by pasteurisation are very slight. The proportion of insoluble calcium is increased by about 6 per cent., the iodine is reduced by about 20 per cent., and there is a reduction of vitamin C.

2. These changes in the calcium, and possibly in the phosphorus, content of cow's milk effected by pasteurisation make it approximate a little more closely in composition to human milk, and as such are an improvement when cow's milk is substituted for human milk. The diminution of vitamin C is unimportant, as this vitamin is usually inadequate and has to be supplemented for both raw and pasteurised milk.

3. Animal feeding experiments provide some evidence that pasteurised milk is less growth-promoting than raw milk for animals whose calcium needs are equal to or greater than that of the calf. They furnish no evidence that pasteurised milk is less nutritive for animals such as the human infant, whose needs for calcium are below that of the calf. Any deductions, from experiments on the one group to the other, are unscientific.

4. There are no human experiments which demonstrate that pasteurised milk is less nutritive to the young child than is raw milk.

5. *There is a vast mass of clinical experience which* shows that heated milk has been consumed for years by infants and young children without any detectable deterioration in their nutritive condition. In view of the negative evidence as to any nutritional damage by pasteurisation, this volume of clinical experience is entitled to the highest consideration.

6. For much older children, if their diet is insufficient in calcium, it is possible that the small reduction in available calcium which seems to occur with pasteurisation might exert a slight retardation of growth. At the most this would be slight and probably unimportant, while at present it is only a possibility. It is too small to have any significant bearing on the value of pasteurisation.

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CONTRIBUTORY SCHEMES AS A "MENACE" TO HOSPITALS.—The following passage appears in the annual report of the Birkenhead and Wirral Children's Hospital: "A serious menace to voluntary hospitals is the alarmingly increasing numbers of people claiming free treatment, either as being in receipt of help from public funds or on account of being members of contributory schemes. The grants made by those organisations to meet the growing expense to the hospitals are not commensurate with the services expected and provided." The year's working of the institution shows a deficit of £3332.

CORRESPONDENCE

DICHOTOMY

To the Editor of THE LANCET

SIR,—The alternatives before me are to connive at dichotomy or to lose a large part of my practice. This may seem a personal matter, a private dispute between my conscience and my pocket; it is because I believe it to have a far wider significance than this that I venture to bring my experience to your notice.

Dichotomy may be classified into three main groups. The first, which includes all those cases in which the general practitioner and the consultant amicably conspire to split the fees between them, does not concern me. I have never been a party to such practices, and, for reasons that will be obvious, know nothing about their prevalence in our profession. Unfortunately, those who grow fat on them maintain a reticence on the subject that makes it a little [illegible] for the rest of us to benefit from their experience. But of the other two groups [illegible] great deal. In the one I include all those [illegible] which the practitioner, too proud to beat about the bush, too honourable to hide his intentions, [illegible] the consultant beforehand of his decision [illegible] a slice out of the fee which the innocent [illegible] imagines to be for the consultant alone. In the other are those cases in which the consultant's [illegible] intimation that there has been dichotomy comes [illegible] the event, when he is presented by the practitioner with a smaller, sometimes considerably smaller, amount than he arranged to exchange his services for.

Here are two recent experiences, one of each kind. A general practitioner called me in to perform an abdominal operation. "I have arranged with the patient," he said, "that your fee [my fee, if you please!] shall be 75 guineas, of which I am taking 30 myself." No nonsense about this practitioner; nothing could have been fairer than his statement of the terms; nothing more generous than his decision to give the lion's share to me; and, for my part, all I had to do was to submit to blackmail or lose what might prove to be a valuable connexion. As I handed him the cheque he blandly said, "These are the only plums we general practitioners get."

The second case is also recent. On this occasion the practitioner was above the sordidness of discussing fees beforehand, but after I had operated on the patient sent me a fee of 20 guineas. Not much, I said to myself, but these are hard times for patients as well as doctors. A few weeks later the patient came to see me again about an apparent recurrence of symptoms, and in the course of conversation I said, quite casually, "By the way, what did I charge you for that operation?" "Sixty guineas," was the reply. "Quite," I said, and then, "let me remember, did that, or didn't it, include your own doctor's fee for looking after you before and after the operation?" "Oh, no," said the patient, "I paid a separate account for that." Forty guineas commission on a 60-guinea job, and a separate account on top of that!

I would not trouble you with a recital of these cases were it not for two things. First of all, they are typical, so typical, indeed, that I could tell you of others, similar in all essentials, in connexion with [illegible] half the practitioners who call me in. And in [illegible] second place, these cases are significant because [illegible] ethical code of our profession does next to nothing to prevent their multiplication. If I, a young surgeon, followed my conscience and told such practitioners that I would have no truck with dichotomy, they would tell me to go to the devil. I speak from bitter and costly experience. I, who loathe dichotomy, find myself practising it, simply because my only alternative at present is to divert a large part of my practice to surgeons who are not troubled with these old-fashioned scruples.

May I suggest as a remedy the formation of a professional organisation of consultants which, just as the trade-unions tend to help up the standard of life of their members by making it impossible for any of them to accept lower pay than the rest, could deal with the evil of dichotomy by imposing upon all its members the obligation of never conniving at it, no matter what the form may be in which it presents itself.—I am, Sir, yours faithfully,

London, W., Feb. 21st. UNWILLING ACCOMPLICE.

*** Of the occurrence of these practices we have evidence, but not of the prevalence suggested by our correspondent.—ED. L.

MOBILISATION OF SUGAR INTO THE BLOOD DURING REST

To the Editor of THE LANCET

SIR,—A boy of 7½ years was recently put under my care for diabetes mellitus of several years' standing, since it was found that his glycosuria and acetonuria were getting out of control. He had had a fixed daily quantity of insulin—I think 18 units—with a fairly constant diet.

I began by putting him on a rigorously exact diet of 1000 cal., his weight being a little over 3 st. 1 lb. He gained 3 lb. in a fortnight, but his blood-sugar showed what appeared to me to be remarkable nocturnal fluctuations. At the beginning of treatment he was having morning and evening doses which I hoped would be able to be determined by the evening and morning urine respectively, but he was very shortly reported to be having attacks of sweating and pallor about four to five hours after the evening dose of insulin, in spite of the fact that the morning urine was loaded with sugar. Estimation of the blood-sugar showed a figure of 0·055 per cent. four hours after the evening insulin dose, whereas ten hours later—that is, following the period of normal sleep and absence of food during the night—the figure rose to 0·35 per cent., the urine being then, of course, loaded with sugar.

In order to counter this state of affairs, it was determined to give the doses of insulin at eight-hour intervals instead of twice a day, raising or dropping the morning, afternoon, and midnight doses by one unit according to the presence or absence of glycosuria four hours after the time of corresponding previous injection. This plan has so far succeeded, but it is interesting to note that of the three doses thus regulated, the midnight one is the highest, although it precedes a period of complete rest and of eight hours' starvation; that is to say, much less sugar is found in the specimens of urine taken four hours after the morning and afternoon injections than in the 4 A.M. specimen. (I may say that every care has been taken to see that the patient could not get any nourishment during the night hours.)

It seems impossible to resist the conclusion that, in this case, during the night sugar is mobilised from the tissues into the blood more quickly than during the day, when the boy is up and about and taking a diet easily enabling him to maintain weight and good health. I should be very interested to know the experience of others in this respect: is the mobilisation ed in research work in connexion with blood essures. He said he did not declare it because he 1 not want to unpack it, and he did not see why should pay on his own goods. At first he said he d taken it to and from Germany; afterwards he id he bought it in Germany three weeks before d had not yet used it. The Customs representative vited the magistrates to take a serious view of an fence committed not by a poor or ignorant person t by one who was well able to pay the duty. The cused, who did not appear, pleaded guilty. A e of £150 with £6 10*s*. costs was inflicted.

BERLIN

(FROM OUR OWN CORRESPONDENT)

SPECIALISTS AND THE MEDICAL TARIFF

An important judgment has been given by the preme Court at Leipzig in respect of the official riff which regulates the fees of medical men in ses where no previous arrangement has been made. is tariff is equally binding on doctor and patient, t hitherto there has been some doubt whether it plies to specialists. Now, however, the court has cided that the whole medical profession must arge according to the official tariff in cases where agreement has been reached, and that there is precedent which exempts university professors d well-known specialists. It was held that it ould be difficult for a local court to decide in a rticular case whether a certain medical man was authority in his special branch of medicine whose ale of charges would therefore be unaffected by e tariff. Patients are recommended to come to an greement with their medical attendant about the e before treatment is begun.

REFORM IN MEDICAL STUDY

It has always been regarded as a disadvantage the German medical student that though the eoretical lectures he attends are excellent his portunities of coming in contact with patients fore a late stage of his career are slight. Medical aching is exclusively in the hands of the universities, d in the university vacations it is interrupted. uring the last summer vacation, however, the irchow Hospital in Berlin arranged for students to ork in the hospital. They lived in the hospital and d regular service in the departments which they d chosen. They began work early in the morning d carried on till noon, when the cases seen were scussed by the staff and the students. The students ere invited to ask questions which were at once swered. The arrangement has proved a great ccess, and it is proposed that during the Easter acation students will again be allowed to work in e hospital. This innovation is of fundamental portance, since it would open to the students the mense field of clinical material to be found outside e university clinics in other hospitals, especially the great cities, which is at present lost to them. he medical staffs of these hospitals, men of the ighest competence, would then also be available s teachers. The first step towards a reform has been ade, and it is to be hoped that others will follow.

EVIPAN NARCOSIS

The compound evipan used to produce a quick nd deep sleep[1] is recommended also as an anæsthetic operations. Dr. Weese reports that with an intravenous injection of sodium evipan anæst of short duration rapidly develops. The chief su of the Martin Luther Hospital in Berlin, Dr. Baet reports that in about 400 operations he has inj 8–10 c.cm., the result being that the patient at fell asleep. The surgeon was able to begin the op tion immediately after the injection, and the narc lasted 15–20 minutes, after which ether can employed if need be. Dr. Holtermann, of the gyna logical clinic of Cologne University, also rep favourably on the results he has obtained.

A GREAT JOURNAL

Eighty years have elapsed since the first numb of the *Münchener medizinische Wochenschrift* appeare and it is therefore the oldest of the great Germa medical weekly journals. It was founded under t name of *Ärztliches Intelligenzblatt* as the organ o Bavarian medical profession, and had in th year of its publication only 1000 subscrib 1883 the *Intelligenzblatt* became a medic journal under its present name. In 19 than 1150 original articles were printe there are now 15,000 subscribers, in part of the civilised world.

ATTEMPT OF SUICIDE WITH ASPIR

Cases of suicide by means of aspirin ar case of this kind is described by Dr. Man Hanover municipal hospital. A man was there who had taken 60 tablets of aspirin o each. He had a temperature of 36·1° C. and cya The pulse-rate was 82, but no abnormal ca signs were discovered. In the course of his ill œdema developed, although his general state improved, and later an enlargement of the he was noted. The œdema disappeared under t influence of digitalis. The starved condition the man when he attempted to commit suicide, th direct action of the salicylates, and the strain on th heart when the man got up all combined to cause the injuries to the heart at such a late stage. To combat the noxious action of excessive doses of salicylates the administration of bicarbonate of soda is recommended.

SHOULD PATIENTS WITH ERYSIPELAS BE ISOLATED ?

A man suffering from disease of the ear which he attributed to the war was conveyed to hospital for observation on behalf of the Court for War Claims. He had at the same time tuberculosis of the knee-joint with an open fistula. In hospital he was in the same room with a patient with erysipelas, and when he was discharged an erysipelas infection developed in the fistula at the knee. He accordingly brought an action against the hospital to recover the costs and damages caused by the erysipelas, alleging that the medical staff had acted negligently in taking him in a room with a patient suffering from erysipelas. The local court dismissed the action, pointing out that according to the opinion of expert witnesses it was doubtful whether an isolation of erysipelas patients was necessary. They gave evidence that eminent surgeons had never isolated such patients whilst others of the same renown had done so. On appeal the High Court of Leipzig reversed the decision, saying that even if medical scientists disagreed about the necessity of isolation it was the duty of hospital physicians to adopt the most painstaking measures of precaution.

INTENTIONAL LEAD POISONING

A turner complaining of lead poisoning was admitted to hospital, and there it was discovered

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[1] See THE LANCET, 1932, ii., 1294.

ARLY DIAGNOSIS OF MALIGNANT DISEASE

To the Editor of THE LANCET

SIR,—Dr. Lindsey Batten in his admirable letter ut clearly what he considers the pros and cons eriodic overhaul. He agrees that the chances scovering disease in its early stages would be ased by examining patients without waiting for ptoms. Further, that it would bring about a adual extension and diffusion of knowledge and erstanding of the normal,” and he suggests that “a r amount of good advice on personal hygiene would spread abroad.” After this promising opening, he ecides against the general overhaul on the grounds hat a number of unfortunate and unprofitable discoveries would be made. Surely, when a proper understanding of the normal has been recognised by the profession, such conditions will be ignored. Then he objects to my suggestion for a limited examination of the sites where accessible cancers arise on the grounds that it guarantees nothing at all. But such an examination *does* guarantee that there is no macroscopic disease in those organs.

It seems, however, that it is on psychological grounds that Dr. Batten bases the weight of his argument against examination of the fit. He does not seem to realise how very prevalent is the fear of cancer. How can it be otherwise when 56,000 families are added to the list each year of those who have lost a near relative? I am convinced that he is wrong in his belief that such examinations become “cumulatively alarming,” or “even completely demoralising,” and in my experience the fact that nothing was found on the last examination gives greater hope to the patient that nothing will be found on the next occasion.

His final objection is entirely from the doctor’s point of view—namely, that he will some day find a patient with an inoperable growth in spite of the fact that a periodic overhaul has been carried out six months previously. This idea that a growth in the accessible sites develops at such a rate is due to the fact that the medical man sees the patient for the first time when the growth is already advanced, and *hears from the patient* that there was no symptom or sign a short time previously. In considering Dr. Batten’s letter generally, one feels that it emphasises the fact that students are not sufficiently taught how wide are the limits of normality, and for this reason the majority of practitioners are reluctant to examine a patient lest they should come across the normal and not recognise it.

In regard to your correspondent, Mr. Arnold Walker, I agree that none of us is infallible in the question of diagnosis, but I am surprised that he does not consider it justifiable to tell a patient with a laceration, or even a slight erosion, that there is no evidence of malignant disease. These are exactly the cases that should be examined every six months, and then, if there is any change in the picture, a section should be taken. Mr. Walker says that patients should be taught “to visit their doctors when they notice a change in the behaviour of an organ,” but I should like to ask him what change there is in the behaviour of a breast when carcinoma is present in the early stages.

The “good doctor,” if he knows anything about psychology, will realise that he cannot reassure his patient without stating that the examination reveals no sign of cancer. The general public are not so stupid as Mr. Walker appears to think. They only expect that those kinds of cancer which can be diagnosed should be excluded. It is the accessible cancers that the public think about most, because the distressing symptoms of ulceration, &c., are most obvious, and my contention is that such periodic examinations will satisfy a very large proportion of the public, and allow them to go about their work thinking only of health, and not of disease.—I am, Sir, yours faithfully,

Harley-street, W., Feb. 28th. MALCOLM DONALDSON.

CHLOROFORM CAPSULES IN CHILDBIRTH

FOR some time Queen Charlotte’s Hospital and Middlesex Hospital have been experimenting with the use of crushable capsules of chloroform as a means of lessening pain in childbirth.[1] Good results have been recorded, and the National Birthday Trust Fund recently offered to supply capsules to any institutions and practitioners that would give them a trial and send a report of the effect on the pain felt by the patient, and on the normal course of labour. A total of 2000 reports have been returned by 42 hospitals and 56 private practitioners, and these were analysed by Mr. L. Carnac Rivett in a paper read at a meeting of the Fund in London last Monday. In all these cases, he said, not one maternal death has occurred, and in the very few cases of stillbirth it was definitely stated that death could in no way be attributed to the chloroform capsules. “Our experience at Queen Charlotte’s Hospital and Middlesex Hospital has been the same; we have administered the chloroform capsules to nearly 4000 patients, and no maternal or infant deaths have been caused by the capsules. . . . At both these institutions the midwives are already using these chloroform capsules with success, and at Queen Charlotte’s Hospital we are now instructing practising midwives how to use them.”

In over 90 per cent. of the records, Mr. Rivett said, the patient obtained relief from pain. In over 50 per cent. of the cases it was noted that the patient felt great relief. In about 5 per cent. the patient became excited and refused chloroform at all; but such excitement might occur during the administration of any anæsthetic, and therefore these few failures were to be expected. In over 60 per cent. of cases it was recorded that the course of labour was not altered at all; in about 15 per cent. the use of capsules were said to assist the progress of labour by abolishing the actual pain and allowing the natural powers to act unhindered by restraining efforts of the patient. Occasionally labour was prolonged but the delay was never serious, and the number of cases in which instruments were used was below the average. Perhaps, however, this was partly because the capsules were for use in normal cases.

After quoting some of the opinions expressed by practitioners who had used the capsules, Mr. Rivett concluded by saying: “This is a completely safe and foolproof method of relieving the intense pains of childbirth, and one which is easily learnt at a very short course of instruction. It is a method eminently suitable for use by nurses and midwives in institutions where there is a resident medical officer.” But there must, he added, be two nurses. It was not convenient for one midwife alone to administer the capsules and conduct the labour.

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[1] See THE LANCET, 1932, ii., 191, 1015, 1024, 1070, 1132.

PETERBOROUGH HOSPITAL.—Last year the Peterborough and District Memorial Hospitals received 1786 in-patients, the largest number hitherto treated. Their average stay was 22·65 days, as against 23·49 in 1931, and their average cost was £5 17*s.* 7*d.*, a reduction of 11*s.* 6*d.* on the previous year. Out-patients cost 11*s.* each, a reduction of 1*s.* 0½*d.*

of sugar into the blood a normal nocturnal phenomenon corresponding to the nocturnal fall of temperature and pulse-rate? One would have thought the contrary; it seems more likely to be correlated with the diminished oxidation and output of CO_2' which accompanies the resting hours.

I am, Sir, yours faithfully,
MARTIN O. RAVEN.
Broadstairs, Kent, Feb. 25th, 1933.

LYMPHOGRANULOMA INGUINALE

To the Editor of THE LANCET

SIR,—May I be permitted to thank Dr. Hanschell for drawing attention to a point which he suggests I had not made quite clear? Until some better nomenclature has been introduced it is still useful to apply the term lymphogranuloma inguinale to cases in which infection has been acquired in temperate countries, sometimes referred to as poradenitis nostras, while reserving the name climatic bubo or poradenitis tropica to those infected in the tropics. When I said that I believed cases of lymphogranuloma inguinale were possibly going unrecognised in this country, I quoted the figures of the Royal Albert Dock V.D. clinic, among others, merely as showing that my opinion was not shared by every one. I did not suggest that cases were being missed at that clinic. It is the one V.D. clinic perhaps where unrivalled opportunity exists for the diagnosis of lymphogranuloma inguinale (poradenitis nostras), as to the same clinic come a continuous stream of seafarers suffering from climatic bubo (poradenitis tropica). I am, Sir, yours faithfully,

HUGH S. STANNUS.
Wimpole-street, W., Feb. 25th, 1933.

CONTROL OF INFECTIONS IN CHILDREN'S WARDS

To the Editor of THE LANCET

SIR,—Dr. Spence's letter appearing in your issue of Feb. 25th serves a most useful purpose in calling attention to the subject of infection in the wards of children's hospitals. Its special importance lies in the emphasis laid on the spread of non-specific infections, especially those of the respiratory and alimentary tracts, among infants in children's hospitals. Dr. Spence's brief rules are admirable in most respects, though I cannot agree with the suggestion that infants should be segregated into groups of approximately the same age. I always try to distribute the infants' cots among those of the older children. In this way I think a certain amount of cross infection may be avoided.

The spread of respiratory infection can, to a large extent, be controlled by structural arrangements which limit the dissemination of infective material through the atmosphere. Gastro-intestinal infection, on the other hand, is probably carried directly or indirectly by the hands of the attendant. Faulty nursing technique is therefore its chief cause. *In all* but our most modern children's hospitals the facilities for exercising proper cleanliness are insufficient, and to my mind it is here that the chief fault lies. However well trained and however careful nurses may be, it is impossible for them to avoid errors in technique if they have neither room nor apparatus for employing their craft. The tools, not the workman, are to blame.

In my experience I have found that one is courting disaster if too many infants are congregated in a ward. The bad results are not due to insufficiency of but to the fact that only a limited number of in can be properly attended to with the facilities a able. In the treatment of sick infants perfect technique is no doubt the primary necessit the construction of new hospitals, more a should be paid to the provision of ample acco tion and suitable apparatus for carrying practice if the dangers attending the reside *infants in hospital are to be avoided.*

I am, Sir, yours faithfully,
GEOFFREY B. FLEMI
Royal Hospital for Sick Children, Glasgow, Feb. 27th, 1

THE CLIMATE OF MADEIRA

To the Editor of THE LANCET

SIR,—The tepid oceanic currents bathing these subtropical regions seem associated with an immunity from chill which in the 72 years of my medical experience has been undisturbed by any serious departure from an established stability of temperature. For though we have suffered from unusual drizzle and cloudy skies the thermometer in this most trying season has hardly varied one degree from 57° F. at our official 9 A.M. reading. This is a winterless shelter in convalescence from "flu," pneumonia, and renal malady; and catarrhal chill, with consequent relapse, is hardly known in the revitalising sunshine of Madeira.

I write to point out that in spite of prevailing weather conditions our stability of climate here has suffered no serious transgression from its known quality; no winter resort has established conditions more potent in convalescence.

I am, Sir, yours faithfully,
Madeira, Feb. 10th, 1933. MICHAEL GRABHAM.

DYSENTERY AS A CAUSE OF SUDDEN DEATH

To the Editor of THE LANCET

SIR,—I was interested to read Dr. Eileen Harvey's paper in your issue of Jan. 28th, but the statement that fulminating infection with sudden death due to *B. dysenteriæ* Sonne had not been previously reported is incorrect. As long ago as 1921, K. Mita[1] described a series of 73 cases which included six deaths, of which three occurred within 36–60 hours from the onset. In 1925 W. G. Savage and P. Bruce White[2] reported three outbreaks of food-poisoning in one of which (No. 91) there was a case with death 18 hours from the onset. In 1928 I[3] reported the case of a boy, aged 10, who died 16½ hours after the onset; in this case I isolated the organism from the contents of the large intestine and from the enlarged lymph glands in the ileocæcal angle. In the same year F. H. A. Clayton and J. W. Hunter[4] reported a case which terminated fatally in about 13 hours. In all the above cases complete identification of the organism by isolation was made; in Dr. Harvey's case no such proof is forthcoming.

While it is perfectly true that infections with Sonne's bacillus are usually mild and clear up quickly, it is obvious that the possibility of severe and fatal types of infection with this organism has been recognised for some time.

I am, Sir, yours faithfully,
Liverpool, Feb. 23rd, 1933. W. HOWEL EVANS.

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[1] Jour. Infect. Dis., 1921, xxix., 580.
[2] Med. Research Council, Spec. Rep. Ser. No. 92.
[3] Brit. Med. Jour., 1928, ii., 96.
[4] THE LANCET, 1928, ii., 649.

I still had my horses and it did not serve as much relief to them. By 1912 the horses were finally displaced, and for the next ten years I did my work with a petrol car of French make which did not give me any trouble. If in a good deal which follows I compare, for such work as mine, mechanical transport with horse-driven vehicles, sometimes to the disadvantage of the former, this is but one example of many that might be quoted of the way in which distinct benefits are bestowed upon the community by developments which are not necessarily well fitted to universal needs.

I have now reached the period in this personal story when the National Health Insurance Act came on the scene. This Act has had its advantages, but in such a practice as mine its disadvantages from the pecuniary point of view are obvious. The fact that before the passage of the Act the sums paid per annum for attending the servants in the large country houses were a useful asset must be mentioned, but of course the Act had no direct influence in emptying the houses. As a matter of fact, the time had gone by before I began to practise when the master of the house not only paid his servants' bills, but often those of his guests as well. Under the first conditions of the Act the total capitation fees which I received from the servants in these houses did not amount to the sum that used to be expected from one of the great houses, so that until the mileage fee was arranged the Act was a dead loss to the country doctor.

A great part of my life, and of those who practise on the same lines, is occupied by going to and fro—this is often forgotten. Village life no longer forms a centre of medical practice, for village industries are largely dead; the old kind of inhabitant living on from generation to generation in the same house and carrying on the family trade has gone. I may have to travel 40 miles in a day seeing only four or five patients; on other days I may have to see double that number, and in this district 10 or 12 professional visits makes a very long day's work. It is then that I sometimes think that the horse had his great merits, and I often wish I had a horse. I travel to inaccessible places to which no motor can get, and this means walking over marsh and moorland. I sometimes have three or four gates to open and shut on a by-road, and this means much trouble getting in and out of a car, which was absent when riding. I have often, on a dark stormy winter's night, had to improvise a stretcher and get help, sometimes from over a mile away, to carry an acute surgical case across a heathery moor in mud or slush to a waiting car, and then to go 25 miles to the hospital.

Motor traffic has further brought great responsibilities. I have frequently had people brought to my house after a motor smash, generally on a Sunday afternoon or evening, week-end drivers being numerous. Fractured skulls and compound fractures of thigh and leg may then have to remain (with their immediate needs seen to it is true) for hours before they can be removed. And more than once the victim of these accidents had been shot over a neighbouring bridge into the river, and was brought to my house not only badly injured but half-drowned. These are samples, and not very exceptional ones, of what a country doctor may have to do, and such occurrences do not come the way of any other type of doctor; they bring grave responsibility when there is no hospital handy. And of course in ordinary routine I have to treat fractures in the homes of the people where the cases in urban practice would inevitably be sent to the hospital.

THE EVIDENCE OF A COLLEAGUE

I have shown these notes to a colleague and friend who practises a few miles from me, but in the hills and dales. His district is probably one of the most difficult in all England. He confirms what I have said and could add to it with some striking reminiscences of his own. His district is sparsely populated and, until he was able to secure payment for the travelling expenses, it was impossible to earn enough money to live, for his time was so fully occupied in getting there and back. He finds the benefit of the car, and reminds me of certain obvious disadvantages in the use of the horse. When he was dependent upon horses it was almost routine for him to have to drive five or six miles with a saddle carried in the back of the trap; at the necessary place the horse was taken out of the trap, saddled, and another five or six miles of riding would follow, and in some cases he had still not arrived at his destination, but was compelled to walk the last lap, leaving his horse tied to a fence. The car has mitigated this sort of thing for him, and the ordeal it must have been in winter and darkness can be imagined; but even now he may have to ford rivers in his car three times in one round, and finish the journey on foot with some risk in stormy weather of being unable to get back to the car, when he is compelled to walk an indefinite way home. He told me that once he got lost in a snowstorm on a journey like this, and in the darkness walked into a morass. He was then obliged to sit down on the first piece of solid ground that he could find and wait there till the light came, when he found himself two miles from his car, which was practically snowed up. These are experiences trying enough for the young man, and my friend is no longer young.

AND YET A CAREER OF CHOICE

Concluding with my personal experience, the real change in my professional life, next to the invention of the motor-car, was made by the installation of the telephone in my village. The telephone has now extended to surrounding villages, and many people in the countryside have it in their houses. This has revolutionised communications between doctor and patient, but it has also multiplied the number of calls, a certain proportion of which may be entirely unnecessary. When the messenger to the doctor had to walk, or drive, or, later, when he used the bicycle where it was possible, the doctor was only summoned when the case appeared to warrant it, now this need not necessarily be so. But undoubtedly midwifery practice has become more satisfactory. I still recall the time when the tramp of any horse in the village might wake me, a light sleeper, and if the horse stopped at my door, I knew that it would mean the rousing-up of a groom, the putting to of a horse, and, if I was detained at a confinement, I should have to send my man away with the gig to be put up where a place could be found. The telephone and the car have eased that situation.

The hardest thing in the life of the single-handed doctor is that he has always to be on the spot. He cannot ever get free for more than a few hours, without going to the expense of engaging a locum-tenent, and the income will too often not permit of this. Just a week-end off duty will be longed for but seldom obtained. No other type of practitioner is so tied up and unable to get help from a colleague. However, if we make our bed, so we must lie on it, and the life has its charms; and had I my time to begin again I would still be a country doctor. But there is only a certain type of man cut out for the job.

Reduction in the Stay of In-patients.—Last year Dewsbury and District General Infirmary received 1810 in-patients, an increase of 486 on the preceding year. Their average stay was 14·7 days, as against 19 days in 1931. At 6471 the out-patients increased by nearly 1000, and their attendances numbered 54,603.

Victoria Infirmary, Glasgow.—This hospital, which expended £69,486 on maintenance account last year, had a deficit of £16,339. New in-patients numbered 8740; they stayed 19·2 days on the average, and cost £7 7*s.* 5*d.* each, as against £8 4*s.* 10*d.* in 1931. The cost per head was £141 10*s.* 8*d.*, as compared with £150 8*s.* 5*d.* There is a waiting-list of about 300. Cases of motor accidents treated in the wards fell from 217 to 183, and 40 fewer were attended in the dispensary.

THE DOCTOR'S DAY

"Come, tell me how you live," I cried,
"And what it is you do!"

XVII.—IN THE DEPTHS OF THE COUNTRY

There must be many readers of The Lancet who know little of the life and work of the purely country doctor, and who can hardly appreciate the "doctor's day" of the man who lives in a village working single-handed. And to be single-handed is a very important factor in his life, for he works with no professional neighbour near at hand, far from a hospital, and perhaps unable to secure the assistance of an ambulance.

I must leave to some extent to the imagination the make-up of any single day in such a practice, while I describe rather what any day may bring forth. In doing this it is impossible not to seem to be merely reminiscing; yet, while country medical practice has been revolutionised in the same manner as the whole of society by the advent of the motor-car, there remain in isolated country practices instances when bygone habits might to-day be more convenient than those of which an advancing twentieth century has compelled the adoption; and there are places where quite old-fashioned customs must persist.

But speaking generally, before the arrival of the motor-car the country practice had a very different pattern, so different that I am ready to believe that many real country practices have ceased to exist; the outlying communities have learned to dispense with the doctor on the immediate spot because of the facilities offered by car and telephone for obtaining medical assistance from the nearest larger centre. Still there remain some of us who have once practised in the heart of the country under the old conditions and amenities, and who, continuing to practise under the new conditions, appreciate their advantages, but none the less are compelled sometimes to make unfavourable comparisons. The vast differences in the scientific position of the medical profession as far as the knowledge of disease was concerned were not, I am compelled to think, reflected in quite the disadvantageous way in practice that younger men may think, despite the simpler machinery of professional life. My predecessors were good doctors, and I found myself able to practise my profession in accordance with what I had learned. This is not to say that I consider that society has not benefited by our scientific progress; but I want to suggest, as one who practised in a purely rural district when the telephone was in its infancy and the motor-car was unborn, that the mechanical developments of the age have not brought about a millennium.

MAINLY REMINISCENT

I live in a village of some 600 inhabitants. There are half a dozen other villages at a distance of some four to six miles away, and within the area thus comprised there are six large country houses, the old centres of rural life. The country side is sparsely inhabited, the occupations are entirely agricultural, and, incidentally, most of the country houses are deserted (their original owners feeling the stress of high taxation), or transformed into week-end resorts. There are two small country towns which lie respectively nine and ten miles north and south of my house. These now have each a cottage hospital, but the nearest general hospital of any size is 25 miles away.

I came here 40 years ago after some experience of practice in a mining district and in two large towns. The fact that that life I led did not appeal to me proves, I think, that I belong to the kind of man who would sooner starve in the country than make a fortune in the town and there must remain some like me; they will find it difficult to exercise their preference. I live in a Jacobean house which has been the home of a line of country doctors, all of one family—father to son—for four generations, and the continuity, I like to think, is not broken, for my wife was a daughter of the last of this series, and if my doctor son succeeds me here the long line will be continued. My predecessors were all horsemen, they were hunting men, and some of them farmed while carrying on their practices. They went their long rounds either on horse-back or open gig in all weathers, and at all times wore a silk hat—this was their badge of a professional life. They began the day's work between seven and eight in the morning and did not get home till evening on a big day's round. This meant keeping three or four horses all the year round. In my first 25 years the only means of transporting patients to hospital was by horse vehicle, and all kinds of contraption were pressed into the service. For lying down cases a flat cart open to the weather was usually employed, and a long journey in, or rather on, such a thing was a grave ordeal. Yet I have seen serious cases of all sorts, acute abdominal patients and patients who had sustained compound fractures, transported apparently with no serious damage to the hospital, though it was often difficult to impress upon them the necessity of going there, because of the terrible reluctance on the part of many of them to enter a hospital in any circumstances. This led to the performance of many operations in the homes of the patients, but treatment on the spot did not necessarily mean a saving of time for the patient, for it might easily take the doctor as long to get to the patient as it would have taken the patient to get to the hospital.

During my term of practice surgery has enormously progressed, but looking back, I am amazed at the good results we got then considering the difficulties. When called upon to operate to-day in a case of appendicitis I have to remember that I saw many cases of what was called "inflammation of the bowels" 40 years ago, and that, though some of them were very ill, a surprisingly high proportion slowly got better without surgical interference. I am not belittling scientific progress, but am noting that its effects are not generally perceptible in an isolated country practice. I can go back to the days when a woman might lie in the clothes she was confined in for a week, because "it was the custom," and I remember the fights which I had with the old country midwives when I wanted their patients to receive proper attention. They simply would not obey, and said that washing and changes of linen would be dangerous. When I once did the necessary offices myself in face of opposition, I was told that if anything happened the woman's death would be at my door. I saw my first death in childbed 30 years after that, and although the child was born naturally and the placenta expelled before my arrival and the patient had a nurse, she died of puerperal septicæmia on the tenth day. The person who would consider this as an argument against scientific progress would be a lunatic; I mention the case to show how such enigmatic happenings prejudice the bucolic mind against necessary improvements. In practice here I have had only once to have recourse to craniotomy; that was 35 years ago, and I have found it necessary to perform one Cæsarean section, two years ago, in something over 1200 cases of midwifery. Cæsarean section is, of course, now done in circumstances when in earlier years the procedure would not have been contemplated. I have had to tackle cases of placenta prævia and various malpresentations single-handed, under anæsthesia produced in the most unfavourable conditions, and have been fortunate in having no fatalities, although often the women were very ill. One had to act alone, there was no other way, and no near help.

THE MODERN CHANGES

In 1909 I ventured upon a steam-car; I do not want to dwell on my experience with that car;

and proceeded to St. George's Hospital, where, having obtained the M.B. degree at Cambridge, he served as assistant surgical registrar and house surgeon. In 1885 he took the diploma of F.R.C.S. Eng., and decided to specialise as an otologist, the impulse in that direction coming from the late Sir William Dalby, then aural surgeon at St. George's, and well known as a pioneer in this country of the modern system for educating the deaf subject. In 1892 Bull became aural surgeon at St. George's in succession to Dalby and was elected consulting aural surgeon to the hospital at the expiration of his time-limit on the active staff.

Bull was a very quiet man, and did not make, or try to make, the public impression which his attainments warranted. He was a good hospital officer, and, within limits which he laid down for himself, a careful and successful operator, but he devised no original methods either in the operating theatre or in his communications to medical literature. A competent teacher, a courteous companion, and a generous host, he was content to be those things, and he leaves behind him the reputation he would most have desired with a large circle of friends.

Bull leaves a widow and one daughter to whom we tender our sympathy.

One of his colleagues on the hospital staff writes: "Bull leaves a pleasant memory in the minds of all those who worked with him as pupils or as colleagues. Without making a strikingly notable figure at his hospital and school he yet achieved that solid appreciation which comes to a man who does his work well and conscientiously, who treats his patients with kindness, his colleagues with courtesy, and his juniors and friends with charming and abundant hospitality. The branch of surgery with which Bull was concerned had not in his years of active service at St. George's reached the pitch of elaboration to which it has now attained, but the aural surgery of his day he carried out efficiently and with marked success. Tonsils were then not necessarily removed in their entirety, and operations on the mastoid were less meticulously performed than is now usual, but these two procedures, which formed the backbone of his operation lists, were systematically executed by Bull with consistently satisfactory results. He was a good judge of a case, and it might be claimed that, as an aural surgeon, his greatest strength lay in diagnosis. In his earlier years Bull had wide experience with anæsthetics and this, as generally happens, made him a tolerant and understanding colleague for any anæsthetist working with him. He was a cool operator, who neither got worried himself nor worried those about him. Outside his professional occupations Bull devoted a good deal of time to works of art and had a nice taste in pictures. This same taste was shown in Bull's appreciation and choice of wine and of food and consequently to dine with him in the family circle was a delightful demonstration of how pleasant an hour may be passed with a few people of good taste and manners, and a knowledge of the world. In his young days Bull was suspected of tuberculous infection and gave up months to its cure in Switzerland. His ruddy complexion and fine figure were for years a striking proof that whatever his early ailment was it had been completely outlived. Much more recently, only about four years ago, he was obliged to undergo an operation for duodenal ulcer, but from this too he made a complete recovery.

PANEL AND CONTRACT PRACTICE

Mileage

INSURANCE practitioners who live in country areas necessarily have to travel further in the course of their panel work than those who live in a closely populated industrial area. A sum of £250,000 set aside to pay for the extra cost of travelling and the extra time is called the Mileage Fund.

The scheme is to make every doctor put in a claim to his insurance committee for mileage under a system of units, one unit corresponding to every mile over two miles from the residence to that of his doctor of each insured person. Thus, for an insured person living five miles away from his doctor the latter would be paid the ordinary standard rate of pay 9s. (less 10 per cent. at the present time), plus three units of mileage. Free choice of doctor enables a patient to choose one who is not necessarily the nearest; in some areas the mileage paid used to be calculated from the patient's home to that of his nearest panel doctor, but this arrangement was altered by the distribution committee a few years ago.

Each insurance committee receives claims from doctors in its area for mileage units and forwards these to the Ministry. The Ministry divide the £250,000 available for this purpose by the total claims for mileage, and the result of this division gives the value of the unit. The returns are periodically revised; the last figures were obtained in 1930 and used for the first time in 1931. The unit, as will be seen from the method of calculation, depends chiefly on distance and probably takes in sufficient account of time occupied.

Quite apart from places of difficult access like the Highlands or Lake districts, for which special provision is made, some panel patients live in lonely cottages several fields from the nearest road or in a lane, perhaps up a steep hill, guarded by gates which seem innumerable. At a recent meeting of the distribution committee the Ministry furnished interesting returns by 430 practitioners who were roughly divided into three groups: A, with many places of difficult access; B, with the average type of country practice; C, with no difficult places to visit, but a few patients living outside the two-mile limit of a mainly urban practice.

There were records of 104 practices of class A. Between them they travelled 1,219,722 miles; paid 173,095 visits to insured patients, and 274,138 visits to private patients. The number of insured persons on the lists were 86,244 and the units of mileage allotted 175,028. To reduce these figures to easier proportions we may assume that the mileage is divided proportionally amongst the insured and private patients according to the number of visits to each. Although the assumption is not necessarily correct the errors will be approximately the same for both sets of figures. On this basis the insured mileage figure works out at 463,594 miles which divided amongst 86,244 insured persons gives 5·4 miles travelled per insured person, and 2·7 miles travelled for each standard unit. The figures for B group work out at 3·4 miles per insured person and 3·9 miles for each standard unit, and for C group 1·6 miles per insured person and 9·7 miles per standard unit. At first sight the discrepancy between the miles travelled for a standard unit in different classes of practice seems very great. The fact that the

OBITUARY

SIR THOMAS JOSEPH GALLWEY, K.C.M.G.

LATE COLONEL COMMANDANT, R.A.M.C.

We regret to announce the death of Sir Thomas Gallwey who, in 1916, was Director of Medical Services of the Home Forces, and who for more than half a century played a distinguished part as a leader in the Army Medical Service. His final illness was protracted, and his death occurred at Pelham-place, London on Feb. 25th.

SIR THOMAS GALLWEY

[*Photograph by Russell*

Thomas Joseph Gallwey was the fourth son of the late Henry Gallwey, an Irish magistrate, of Tramore, Co. Waterford, and was born in 1852, being in his 81st year at the time of his death. He received his preliminary education at Stonyhurst and his medical training at the Royal University of Ireland, where he graduated as M.B., M.Ch. at the age of 21, and entered the Army Medical Service immediately. From the beginning he proved himself both a capable doctor and a good officer. He first saw service in the Afghan war, but in 1885, being little over 30 years of age, he was specially promoted surgeon major for services in Egypt. He made good use of great opportunities. For in 1885 the failure of the dual control by England and France of Egyptian affairs led to successful Arab revolts, the sending of British and French Fleets to Alexandria, the refusal of the Sultan of Turkey to assist in putting down the disorder, and finally to the intervention of the British Government, France and Italy having declined cöoperation. Gallwey was in the middle of all these events. By the Egyptian expedition of 1882 the revolt was suppressed at the battle of Tel-el-Kebir, and Gallwey received the medal with clasp and the Khedive's Star. He took part in the Sudan expedition when the Sudan was established as an integral part of the Khedive's dominions. Restoration of order in the province became a British responsibility, and when the defeat of the army of Hicks Pasha led to the rise of the Mahdi and the fall of Khartoum, where General Gordon was immured, the Nile expedition under Wolseley followed. It was a time of continuous struggle. The operations against Mahdyism during the 11 years from the end of the Nile expedition ended in the withdrawal from the Sudan, while the Dongola campaign constituted the story of the suppression of the Dervishes. The Sudan operations for the next four years were conducted by Kitchener as Sirdar of the Egyptian Army, and the Dongola campaign recovered the province for Egypt. In this expedition Gallwey distinguished himself, being mentioned twice in despatches and receiving British and Egyptian distinctions and the C.B. He dealt with particular success with an outbreak of cholera among our troops at the beginning of the campaign. In the following year, 1897, he was appointed P.M.O. in the Egyptian Army and was present at the battles of Atbara and Khartoum, and was again mentioned in despatches.

In 1898 there followed more military and administrative work of an important sort on the outbreak of the South African war. He was first appointed P.M.O. of an infantry division at Cape Town, and later P.M.O. in Natal, and, as had previously been his experience in Egypt, he was again in South Africa present at some of the most critical actions in the war, notably at Spion Kop and Colenso and the relief of Ladysmith. He was mentioned in despatches twice, received various military decorations, and in 1900 was appointed K.C.M.G. He remained in South Africa until his appointment as P.M.O. in India, a post which he held for four years with distinction. His administrative work proceeded efficiently and smoothly under his particularly acceptable personality, although the official side of medicine in India was already beginning to manifest its later troubles. At the expiration of the Indian appointment he returned to England as P.M.O. of the Aldershot Command and at the expiration of this appointment in 1911 he retired.

But not for long. Immediately on the outbreak of the European war in 1914 he returned to the Aldershot Command as Deputy Director of Medical Services. He was successful in discharge of the heavy responsibilities which fell upon him, his long and extraordinarily important official experience enabling him to manage men and affairs with promptitude and decision. At the close of the war he was made Colonel Commandant R.A.M.C.

This record of Sir Thomas Gallwey's life as soldier and administrator would be incomplete without reference to a side of his activities which played a vital part in his career. Gallwey was a really great sportsman. He was one of the founders of the Turf Club in Cairo, while he was the owner of two famous horses, "Hidden Mystery" and "Leinster," the former of which was favourite for the Grand National some 30 years ago. He won the Calcutta Cup at rackets in India, which corresponds to the home amateur championship at that game—the cup it is understood he gave to Lord Kitchener who was always a great personal friend. He was a fine polo player, and received a presentation cup for a victory over John Roberts at billiards when that great professional was touring India, the amateur no doubt receiving points. He organised for the military meeting at Sandown for over 20 years, and for a long period was a steward at Sandown and Kempton. Horse-racing was a passion with him.

Sir Thomas Gallwey married in 1901 Maud Margaret Howard, daughter of the late Capt. J. W. J. Giffard of the Hon. Corps of Gentlemen-at-Arms and widow of Capt. C. W. Gordon, R.A.

WILLIAM CHARLES BULL, F.R.C.S.

CONSULTING AURAL SURGEON, ST. GEORGE'S HOSPITAL

We regret to announce the death of Mr. W. C. Bull, the well-known aurist, which occurred at his home in Clarges-street, Piccadilly, on Feb. 24th.

William Charles Bull was the son of Mr. Goodman Bull of Liverpool, and was born at Bromborough in 1858. He was educated at home and at Gonville and Caius Colleges, where he had a successful career as a student, and also won some prominence as a cricketer. He graduated in the Natural Science Tripos

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Exchequer Grants to Local Authorities

In the House of Commons on Feb. 21st the following resolution was considered in Committee, Sir D. HERBERT, Chairman of Committees, in the chair:

> That in respect of each year in the second fixed grant period: (*a*) the amounts to be included in the General Exchequer Contribution for England under Para. (c) of Subsection (3) of Section 86 of the Local Government Act, 1929, and in the General Exchequer Contribution for Scotland under Para. (c) of Subsection (3) of Section 53 of the Local Government (Scotland) Act, 1929, shall be respectively the sum of £5,350,000 and the sum of £850,000; and (*b*) the amounts to be paid under Para. (b) of Subsection (1) of Section 87 of the Local Government Act, 1929, and under Para. (B) of Subsection (1) of Section 54 of the Local Government (Scotland) Act, 1929, respectively, out of the Road Fund towards the contributions aforesaid shall be the same as were payable in respect of each year in the first fixed grant period.

Mr. SHAKESPEARE (Parliamentary Secretary to the Ministry of Health), in moving the resolution, said that its object was to enable a Bill to be introduced to fix the Local Government (General Exchequer Contributions) under the Local Government Act for the second grant period of four years. The new money to be provided under Section 86 of the Local Government Act, 1929, was fixed at £5,350,000 for England and Wales, and under Section 53 of the Local Government (Scotland) Act at £850,000 in respect of Scotland. The second point was to determine the variable element in the annual contribution from the Road Fund towards the General Exchequer Contribution, and in the resolution that amount for the second grant period was to be the same as it was for the first grant period—namely, £3,000,000. The Local Government Act, 1929, introduced very far-reaching and, indeed, revolutionary changes in the whole structure of local government. It recast the financial relationship between the exchequer and the local authorities. It deprived local authorities of a large amount of revenue through its derating provisions to the extent of £22,250,000. It changed the basis of grants; it stopped the percentage grants in respect of certain services, the assigned revenues and the grants under the Agricultural Rates Acts; it discontinued a total amount of grants of £16,250,000, and it provided new money fixed at £5,000,000. The loss of rates, loss of grants, and new money made up the General Exchequer Contribution which was a consolidated block grant paid annually. That grant was fixed for the first grant period of three years, which would terminate on March 31st, 1933. The second grant period would last for four years, and thereafter each grant period would be for five years. The second grant period would commence on April 1st next. As against those who contended that the Exchequer Contributions proposed for the second grant period were too high in view of the present financial position of the country, and those, on the other hand, who contended that they were too low, he claimed that the Government were entitled to argue that in adhering to the minimum proportion laid down in the Local Government Act justice was done. The Local Government Act was a network of compromise and concession. One of the main safeguards that the local authorities sought was to the effect that there should always be this equilibrium between the General Exchequer Contribution at the start of a grant period, and the rate-borne and grant-borne expenditure of the penultimate year of the previous period. After the lapse of 17 years the whole of the General Exchequer Contribution was to be paid out according to a famous formula, which was roughly determined by weighting population for given factors where the need most lay. For the first grant period only £15,000,000 of the £43,500,000 comprising the General Exchequer Contribution was allocated according to the formula; for the second grant period an identical amount of £15,000,000 would be so allocated; but thereafter more and more would be allocated according to the need and less and less according to the loss of rates and grants, until at the end of the 17-year period the whole of the vast consolidated block grant would be given according to need.

The reforms embodied in the Local Act had not yet been carried out. There was a sort of reconditioning going on the whole time within the counties to prevent overlapping of services and to promote efficiency, and if almost at the start of the 17-year period, when the Government were undertaking to help local authorities to reorganise their areas and services, they were to break faith with them, and at the end of three years reduced the General Exchequer Contribution below the minimum proportion laid down in the Act, it was easy to see that the achievement of the ultimate object might be jeopardised. At all events, one could at least say that the whole structure of the Local Government Act might well be strained. About 8 per cent. of the £15,000,000 in the first period went in respect of the unemployment factor. In the second period 20 per cent. of that sum would go to those areas where unemployment was more severe than it was before. Therefore, if they reduced the amount of new money it was obvious that a relatively more severe reduction would take place in those areas whose financial circumstances were strained in consequence of unemployment, while more prosperous areas with little or no unemployment, and where there had been no change of population would receive very little reduction in their allocation of the new money. For those two reasons the Government had decided to adhere to the minimum proportion. The Minister of Health had promised some months ago that he would inquire into the operation of the formula to see whether the various factors were operating wisely. That inquiry was still proceeding and anything done under the present resolution, and the Bill which was based upon it, was without prejudice to any recommendation made or adopted as a result of that inquiry.

Mr. GREENWOOD said that the services in respect of which percentage grants were discontinued under the Local Government Act were maternity and child welfare, with minor exceptions; the treatment of venereal disease, the treatment of tuberculosis, and the treatment of mental defectives. These were fundamental social problems. They all knew that there was hardly a town in the country where maternity and child welfare services were as highly developed as in the national interests they ought to be. That certainly applied to the treatment of tuberculous people. As long as there was unnecessary luxury these vital services which went to men-making and women-making in this country ought not to be crippled as they were being crippled to-day. The indictment of the Opposition against the Government in respect of this resolution was because of its meanness. They had penalised, for 16 months, the local authorities; they had held a bludgeon over those authorities for 18 months and there was another bludgeon still over their heads in the shape of the Ray Report. The Government were bludgeoning the local authorities at a time when, whatever might be said about certain national services, local government services ought to be pressed forward because of their enormous permanent value to the nation during the coming hard years.

Mr. HERBERT WILLIAMS said he thought that local government was grossly extravagant at the present time. The country was so over-taxed that unless the burden was reduced they would not be able to restore large numbers of people to employment. In first two miles travelled are included in the total distances travelled, but do not count in claims, may have a special effect on doctors in group C who travel constantly within an area of two miles, though able to claim mileage only when they go beyond this range. In this way their total mileage per unit mounts up. These figures are to be considered further by the distribution committee with the object of discovering whether the distribution as carried out at present is equitable in the various classes of practice.

The comparable figures for 1928 show quite clearly the increase in work being done nowadays. Although the number of doctors keeping records was not so high (291 in 1928 against 430 in 1932), the figures are as follows :—

	Group.	1928.	1932.
Miles travelled per insured person.	A ..	4·3	5·4
	B ..	2·6	3·4
	C ..	1·4	1·6

	Group.	1928.	1932.
Miles travelled per standard unit.	A ..	2·2	2·7
	B ..	3·4	3·9
	C ..	8·3	9·7

Possibly one reason for increased mileage is the increased number of references to the regional medical officer. In the country this often involves a visit from doctor to patient, whereas in town a patient may call to see the doctor.

These figures show the wisdom of keeping records accurately. Part of the capitation fee is paid definitely for the purpose of having records kept, and those doctors who fail to carry out this obligation are doing disservice to their fellow practitioners, for regional medical officers who examine their records are led to believe that they are doing less work than they are really doing, and consequently the payment they receive per attendance appears higher than it actually is. Thus a difficult position is created for negotiators who advance the argument that the remuneration offered is too low, having regard to the amount of work and standard of skill required to carry out obligations under the Act in these times.

R.S.V.P.

One of the points brought out in the Onslow report was the need for some standard form which a medical man could use when sending a patient to a hospital out-patient department for advice and/or treatment. It had been openly stated that insurance practitioners were in the habit of unloading troublesome cases on hospital consultants, with the result that hospitals were doing work which insurance practitioners ought to do themselves. There was not much, if any, evidence of this placed before the committee, and the representatives of the London Panel Committee and of the London Public Medical Service made it clear that such a shifting of responsibility was not at all what they wanted; their complaint was that a case sent to hospital for an opinion only was apt to be treated and kept on the out-patient list until cured. The reason for this, they thought, was that it was the line of least resistance for the consultant; it saved him writing letters, and he felt certain the patient was obtaining the treatment ordered. Also it swelled the out-patient attendances, which was a good advertisement for the hospital and thus helped to get subscriptions. Such methods, they felt, showed a lack of that spirit of coöperation which should exist between hospitals and general practitioners in the neighbourhood. To make the position clear, these delegates advised the preparation of a leaflet, to be used by practitioners sending cases to hospital, containing a statement that the doctor wanted the case back. This leaflet was to be drafted by the hospitals committee of the British Medical Association and then submitted for approval to the various interests concerned: King Edward's Hospital Fund committee, hospital committees, consultants, and panel committees. The B.M.A. model form was eventually considered by the general purposes sub-committee for London and, although its cost was thought to be somewhat high and the arrangement not very satisfactory, yet they advised the panel committee to accept it. It was, however, rejected, largely as a result of the omission from the leaflet of any indication that the practitioner did not want a patient to be treated at hospital if he could properly be treated at home. The panel committee then decided to draft a form in which this position was safeguarded by the additional words:

> "As I wish to continue the treatment of this patient, I shall be glad if you will refer him/her back to me unless you consider either in-patient treatment or special out-patient treatment is necessary."

When this draft was submitted an amendment was moved and carried to delete the words "as I wish to continue the treatment of this patient," as it would not be right to say that about a case (say) of carcinoma of the pylorus, and as the rest of the sentence made it plain that the doctor did want the case back if suitable for return.

The panel committee form will be printed for economy on one side of the paper only, not on alternate sides as in the B.M.A. form. It seems a pity that the two bodies could not agree on a single form. There is, of course, no obligation on any doctor to use either of these forms. There is also nothing in this courtesy arrangement to prevent a hospital consultant from seeing a patient if he thinks fit without an introductory note from the attending practitioner. In both forms there is a note on the reply page which runs: The information on this form is strictly confidential and for your own use only.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Lt. V. G. Horan to be Surg. Lt.-Comdr.

The following appointments are notified: Surg. Lt.-Comdr. D. H. Kernohan to *Vivid*, for Plymouth Hospital. Surg. Lt. H. L. Belcher to *Pembroke*, for Chatham Barracks.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Sub-Lt. G. S. Thoms to be Surg. Lt.

Surg. Lt. J. E. Davenport to *Victory*, for Haslar Hospital.

ROYAL ARMY MEDICAL CORPS

The undermentioned Lts. (on prob.) are confirmed in their rank: T. M. R. Ahern, R. Johnston, A. P. Trimble, J. B. Macfarlane, T. J. Moloney, J. L. Martin, H. K. G. Nash, A. D. Bourne, G. W. Crimmin, and G. W. Kendrick.

The undermentioned to be Lts. (on prob.): F. King and H. Clain.

ROYAL ARMY RESERVE OF OFFICERS

Col. G. A. Troup, ret. T.A., vacates the appt. of Hon. Col., R.A.M.C., Units, 54th (E. Anglian) Div., on completion of tenure and is succeeded by Col. W. D. Watson, ret. T.A.

TERRITORIAL ARMY

Col. A. J. Brown retires on completion of tenure of appt. as A.D.M.S., 52nd (Lowland) Div., and retains his rank, with permission to wear the prescribed uniform.

Lt.-Col. and Bt. Col. A. P. Watson, from Gen. List, R.A.M.C., T.A., to be Col., and is apptd. A.D.M.S., 52nd (Lowland) Div.

Maj. J. E. Rea, R.A.M.C., to be Divl. Adjt., 43rd (Wessex) Div., *vice* Maj. G. G. Drummond, R.A.M.C., vacated.

John Burns to be Lt.

INDIAN MEDICAL SERVICE

W. S. Morgan to be Lt. (on prob.).

against them they were ruled out of unemployment benefit from the time of suspension until the decision of the medical referee; and if he would consider taking steps to meet this situation.—Sir Henry Betterton replied: Such persons are not prevented from signing the register by any rule of the Department, but in order to claim benefit they would have to sign a declaration that they are capable of and available for work at a time when they are contending for the purposes of workmen's compensation that they are not capable of work. It has been decided by the Umpire that a person who is contending that he is not capable of work cannot be available for work and is therefore not qualified for benefit.

Mr. Tinker: Does not the Minister see the difficulty in which an applicant is placed. First of all he thinks he is not fit for work and then the medical referee declares him to be fit for work; that causes the difficulty. Will the right hon. gentleman when he brings in legislation consider this point.

Sir H. Betterton: Yes, I will consider it, but the hon. Member forgets that he is contending that a man is not capable of work because he is under a disability. If he makes that contention on the one hand it is almost impossible I should think to make the submission that he is fit for work.

Mr. Tinker: The medical referee says that he is.

The Death of Madame Vlora

Mr. Cocks asked the Home Secretary what action had been taken by Scotland Yard in response to the two applications from Avry Bey Delvina asking for information regarding the death of his sister Madame Vlora; and why that information had not been furnished.—Sir John Gilmour replied: As this death had been the subject of a coroner's inquest, Mr. Delvina was advised by the Commissioner of Police on the 18th instant that any application for official information concerning the circumstances of Madame Vlora's death should be addressed to the coroner, whose name and address were furnished to him.

Mentally and Physically Defective Children

Viscountess Astor asked the Parliamentary Secretary to the Board of Education the total number of children who entered school at 5 years of age last year; and what proportion of them were suffering from mental or physical defects.—Mr. Herwald Ramsbotham replied: I have no information which would enable me to give the precise figures asked for. Of all children who entered public elementary schools for the first time in 1931 (the last year for which information is available) 19·4 per cent. were found to require some form of medical treatment. The corresponding figures showing the proportion suffering from mental defects are not available. Such defects are frequently not diagnosed until a later stage.

Viscountess Astor: Is it not true that the chief medical officer in his report says that 27 per cent. of the juveniles in elementary schools are physically defective, and also that there are diseases that could be easily prevented, and that the best way to treat them is by open-air nursery schools? Does the Government think that this is a good time to establish open-air nursery schools?

No answer was given.

Discharges from Mental Hospitals

Mr. David Grefell asked the Minister of Health if he would issue a regulation with a view to acquainting the public with their rights under the Lunacy Act, 1890, that Section 79 should be posted up in all waiting-rooms where friends came to visit the inmates of mental institutions in order that the patient's friends, as distinct from his relatives, might know that it was in their power to apply to the visiting committee for the patient's discharge to their care.—Sir E. Hilton Young replied: There are objections to a regulation of the kind suggested. I am advised that the situation is adequately met by the existing rule which requires the managers of every institution, on the admission of every rate-aided person, to send a notice, embodying the substance of Section 79 of the Lunacy Act, to all persons whose names appear as relatives or friends of the patient on the statement of particulars accompanying the reception order.

Milk Adulteration

Brigadier-General Clifton Brown asked the Minister of Health whether his attention had been called to the comments in the Report of the Milk Reorganisation Committee on the unfairness of the Food and Drugs Adulteration Act, 1928, to the milk producer; and whether he would now consider legislation to amend that Act by distinguishing between the wilful adulterator and persons who acted in complete good faith.—Sir E. Hilton Young replied: I am aware of the comments referred to. This matter will be considered in conjunction with my right hon. friend, the Minister of Agriculture, in the light of the recommendations of the Commission as a whole.

Influenza

Major Despencer-Robertson asked the Minister of Health whether, in view of the number of deaths from annual influenza epidemics, which in the first few weeks of this year amounted to over 10,000, and of the dislocation of public services and of industry arising from the widespread character of the epidemics, he would consider making influenza a notifiable disease.—Sir E. Hilton Young replied: I fully appreciate the gravity of the effects of influenza, and the question of making it a notifiable disease has been frequently considered. I am advised, however, that this course would not be likely to reduce either the morbidity and mortality from influenza or the dislocation of public services and of industry to which my hon. and gallant friend refers. The many clinical forms which influenza takes, and the many uncertainties of its diagnosis would in any event make it difficult to draw satisfactory conclusions from notification figures. My hon. and gallant friend is no doubt aware that acute influenzal pneumonia is already a notifiable disease.

MONDAY, FEB. 27TH

All-India Medical Council

Mr. Parkinson asked the Secretary of State for India whether the Government of India would consider the advisability of delaying the introduction of the All-India Medical Council Bill until such time as the federal legislature had been constituted.—Sir S. Hoare replied: The Bill has already been introduced.

Medical Examinations and Pensions Claims

Mr. Harcourt Johnstone asked the Minister of Pensions whether it was the practice to make fresh medical examinations, on behalf of his department, of men whose claims to disability pensions had been finally disallowed in cases where fresh evidence had been brought forward by independent medical men.—Major Tryon replied: Where fresh evidence of fact is produced which indicates that the decision was given on an incomplete knowledge of the material facts, such action is taken as may be required, including further medical examination, if this is found to be necessary to determine the specific point at issue—namely, the origin of the condition complained of.

Local Authorities Expenditure

Mr. Herbert Williams asked the Minister of Health on what basis it had been estimated that the total local expenditure from all sources would show a reduction of as much as £20,000,000, as compared with the figure for the year 1929–30.—Mr. Shakespeare (Parliamentary Secretary to the Ministry of Health) replied: The estimate to which my hon. friend refers was that total local expenditure showed a reduction of £20,000,000 over the figure for the year 1929–30. This figure was, as my right hon. friend was advised, the approximate reduction in local expenditure on the figure of 1929–30 which the Ray Committee estimated would be secured as a result of the economy measures taken in the autumn of 1931.

TUESDAY, FEB. 28TH

The Panel Committee in Glasgow

Mr. McGovern asked the Secretary of State for Scotland the reason for allowing doctors who had no panel practice to serve on the national health insurance panel committee of the burgh of Glasgow; and were they required to pay subscriptions similar to the panel doctors.—Mr. Skelton (Under Secretary for Scotland), replied: The arrangements for the appointment of panel committees in Scotland are laid down in regulations of which I am sending the hon. Member a copy. These regulations provide that only medical practitioners who are under agreement to treat insured persons shall be entitled to take part in the election of members of panel committees, that all the members shall be duly qualified medical practitioners, and that not less than two-thirds of the members shall be practitioners under agreement to treat insured persons. I have no reason to think that the provision whereby these committees may include a certain proportion of non-panel practitioners is other than a desirable one. The arrangement under which the administration expenses of the panel committee for the burgh of Glasgow are defrayed by means of a system of voluntary subscriptions by practitioners is a private one with which I have no concern.

Mr. McGovern asked the Secretary of State for Scotland the reason for the increase of the national health insurance panel committee of the burgh of Glasgow from 30 to 51, in view of the provisions of the National Health Insurance Panel Committee Regulation.—Sir Godfrey Collins replied: I am sending the hon. Member a copy of amending Regulations made by the Department of Health for Scotland on April 21st last which, as he will observe, provide that the government borne on rates and grants was roughly £105,000,000, and in the year March 31st last it was £319,000,000. The cost had been growing in recent years. In 1922–23 it was just under £261,000,000. In 1928–29 it had grown to £294,000,000, and last year it reached £319,000,000. If they applied the change in the value of money as well as the increase in the cost of local government, local authorities were spending to-day on real values 75 per cent. more than ten years ago. This growth of local expenditure was intolerable, and unless it was checked it would lead to disaster.

Viscountess ASTOR strongly urged on the Minister of Health the necessity of watching the health of children, especially up to 5 years of age.

After further debate,

The resolution was agreed to.

On Thursday, Feb. 23rd, the resolution was agreed to on Report. The Bill was then brought in and read a first time.

Broadcasting

Mr. EMMOTT moved the following motion:

> That this House, being satisfied that the British Broadcasting Corporation maintains in general a high standard of service, is of opinion that it would be contrary to the public interest to subject the Corporation to any control by Government or by Parliament other than the control already provided for in the charter and the licence of the Corporation; that controversial matter is rightly not excluded from broadcast programmes, but that the governors should ensure the effective expression of all important opinion relating thereto; and that only by the exercise of the greatest care in the selection of speakers and subjects can the function of the Corporation be fulfilled and the high quality of the British broadcasting service be maintained.

Sir S. CRIPPS moved as an amendment:

> To leave out from "That," to end, and add "in view of the growing importance of broadcasting in the life of the community, particularly its actual and potential influence in the realm of political controversy, it is expedient that a Select Committee be appointed to review the work of recent years and make recommendations.

After further debate,

Sir KINGSLEY WOOD (Postmaster-General) said that the British Broadcasting Corporation was held in high respect throughout the world. It had and could have no other motive or object than that of public service. It had taken its responsibilities seriously, and was it not the least that Parliament could do to encourage and support it in its purpose and work.

Sir E. GRAHAM-LITTLE said that the whole trend of the debate had been towards the political aspect of broadcasting. He wished to introduce the educational aspect. An examination of the current Year Book of the British Broadcasting Corporation showed, under the heading "Events of the Year," that for ten months during which some 300 or 400 events were mentioned, only four of those could in any sense be described as promoting education in a wide and liberal sense. He would plead for a wider use of educational opportunities. The disregard of educational opportunities was particularly absurd in London, because in the administrative County of London there were 50 or more colleges of university rank contributing fresh knowledge and competing with each other in putting forward that knowledge. He did not think that the B.B.C. need have any fear that what were called "high brow" discourses would not be acceptable. University members, he thought, might point with pride to the growth of the number of students in the universities of the country, which demonstrated the fact that there was a large and increasing audience for serious material.

The amendment was negatived by 203 votes to 27. Mr. EMMOTT's motion was then agreed to.

Home and Empire Settlement

In the House of Commons on Friday, Feb. 24th, Mrs. WARD moved the second reading of the Home and Empire Settlement Bill, a measure to amend the Empire Settlement Act, 1922. She said that the object of the Bill was to give greater power and facilities to the Secretary of State for the Dominions to coöperate in schemes of land settlement in the United Kingdom and the Dominion overseas. The Bill set up a board of five persons whose sole job it would be to promote the development of the natural resources of the Dominions and the United Kingdom.

Mr. THOMAS (Secretary of State for Dominion Affairs) said that while this was not a time when they could hope that any large number of people could be sent overseas, he believed that ultimately prosperity would be restored to the Dominions and then the opportunity for migration would come. In the interval he agreed that they ought to get ready. The Government therefore supported the second reading of this Bill, and hoped that as a result of discussions in Committee practical suggestions would emerge of which the Government would be ready to take advantage.

After further debate,

Sir FRANCIS FREMANTLE said that the population question was changing the alignment of the world. While the increase in the populations of the West was drawing to its close the populations of Asia were increasing. That fact was never taken seriously enough by our thinkers, who light-heartedly referred to the advantages of the declining birth-rate. The vital statistics had filled him with serious anxiety in the last 30 years. If they could keep the position stable it would be a different question, but they could not. They had seen the birth-rate decline from 35 to about 15 per 1000, and it was getting very near to the death-rate. The death-rate had declined from 24 to 12 per 1000, but it could not go much lower. In fact, as the population was becoming on an average more aged, so it was bound to go up. Before long the death-rate would be bound to go up to 20 per 1000, which meant an average life of every individual born of 50 years. This meant a shrinking of the population. They must see what Mr. Baldwin said in one of his notable speeches—the grim vision, the spectre that was lurking behind those facts. Australia with her shrinking birth-rate, and before long her increasing death-rate, would not be able to maintain with her population of 8,000,000 the whole of the continent in face of the enormous advance of the populations of Asia. A white Australia depended on the reinvigoration of the population from the populations of other parts of the Empire. The Empire could not carry on as it was unless the problem of Empire migration was settled. That was really the great case for this Bill.

The Bill was read a second time.

Pharmacy and Poisons Bill

In the House of Lords on Feb. 28th the Earl of LUCAN presented a Bill to amend the law relating to pharmacy and poisons.

The Bill was read a first time.

HOUSE OF COMMONS

WEDNESDAY, FEB. 22ND

Tuberculosis in Scotland

Mr. MCGOVERN asked the Secretary of State for Scotland the number of cases of tuberculosis in Scotland in the last 12 months.—Mr. SKELTON (Under Secretary of State for Scotland) replied: The final figures are not yet available but provisional returns show that the number of new cases of pulmonary tuberculosis notified in Scotland during the year 1932 was 5512 and that the corresponding number of non-pulmonary cases was 3888.

THURSDAY, FEB. 23RD

Medical Referee and Workmen's Compensation

Mr. TINKER asked the Minister of Labour if he was aware that persons whose compensation was suspended under the Workmen's Compensation Act pending the decision of the medical referee were not allowed to sign on at the labour exchange, and if the decision of the medical referee was

Thursday.—10 A.M., Neurological Clinic. 11.30 A.M., Fracture Demonstration. 2 P.M., Eye and Genito-urinary Clinics. 4 P.M., Lecture: Dr. Burnford: Febrile States.

Friday.—10 A.M., Skin Clinic. 12 noon, Lecture on Treatment. 2 P.M., Throat Clinic. 4.30 P.M., Lecture: Dr. Burnford: Febrile States.

Saturday.—10 A.M., Medical Wards, Children's Clinic. Surgical Wards. The lectures at 4.15 P.M. are open to all Medical Practitioners without fee.

Daily.—2 P.M., Operations, Medical and Surgical Out-patients.

ONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

Tuesday, March 7th.—5 P.M., Dr. H. T. Barron: Common Eruptions in Childhood. (Chesterfield lecture.)

Thursday.—5 P.M., Dr. W. N. Goldsmith: Benign Growths of the Skin. (Chesterfield lecture.)

ATIONAL HOSPITAL, Queen-square, W.C.

Monday, March 6th.—2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Hinds Howell: Vascular Diseases of the Nervous System.

Tuesday.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Martin: Demyelinating Diseases of the Nervous System.

Wednesday.—2 P.M., Dr. Martin: Out-patient Clinic. 3.30 P.M., Dr. James Collier: Clinical Demonstration.

Thursday.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Walshe: Cerebral Tumours.

Friday.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. James Collier: Virus Diseases of the Nervous System.

T. MARK'S HOSPITAL, City-road, E.C.

Thursday, March 9th.—4 P.M., Mr. J. P. Lockhart-Mummery: Fistula in Ano.

ENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

Friday, March 10th.—4 P.M., Mr. J. D. McLaggan.

ST. PETER'S HOSPITAL FOR STONE, Henrietta-street, W.C.

Wednesday, March 8th.—3 P.M., Dr. John Roth: Radiological Investigation of Urinary Disease.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

Wednesday, March 8th.—4 P.M., Mr. W. E. Tucker: Manipulative Surgery.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION, 11, Chandos-street, W.

Friday, March 10th.—5 P.M., Dr. J. A. H. Brincker: Presidential address.

NATIONAL COUNCIL FOR MENTAL HYGIENE.

Wednesday, March 8th.—5.30 P.M. (11, Chandos-street, Cavendish-square, W.), Dr. E. A. Bennet: Confidence.

ROYAL NORTHERN GROUP OF HOSPITALS.

Wednesday, March 8th.—3.15 P.M. (at the Royal Chest Hospital, City-road), Dr. F. E. Saxby Willis: Cancer of the Lung.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

Thursday, March 9th.—9 P.M., Mr. V. E. Negus: Diagnosis and Treatment of Pharyngitis.

MANCHESTER ROYAL INFIRMARY.

Tuesday, March 7th.—4.15 P.M., Dr. W. Brockbank: Pleural Effusion.

Friday.—4.15 P.M., Mr. H. H. Rayner: Demonstration of Surgical Cases.

ST. MARY'S HOSPITALS, Manchester.

Friday, March 10th.—4.15 P.M. (at the Whitworth-street West Hospital), Post-graduate Lecture. Dr. Bramwell: The Cardiac Complications of Pregnancy.

ANCOATS HOSPITAL, Manchester.

Thursday, March 9th.—4.15 P.M., Dr. N. Kletz: Colitis and Affections of the Colon.

GLASGOW POST-GRADUATE LECTURES.

Wednesday, March 8th.—4.15 P.M. (at the Western Infirmary), Dr. J. G. Macgregor-Robertson: Venereal Diseases (Male).

Appointments

Foster, J., M.B. Camb., F.R.C.S. Eng., has been appointed Ophthalmic Surgeon, Leeds General Infirmary.

Page, C. Max, M.S. Lond., F.R.C.S. Eng., Consulting Surgeon to the Royal Hospital and Home for Incurables, Putney.

Certifying Surgeons under the Factory and Workshop Acts: Burnie, R. McC., M.B., Ch.B. Edin. (Mochrum, Wigtown); Cogan, L. D. B., L.R.C.S. Edin., L.S.A., L.M.S.S.A. (Northampton); and Sherwood, C. H., M.B., Ch.B. Birm. (Willenhall, Stafford).

Vacancies

For further information refer to the advertisement columns

Aberdeen University.—Lecturer in Medicine. £400.

Aylesbury, Buckinghamshire County Council.—Asst. County M.O.H. and M.O.H. £800.

Barnstaple, North Devon [illegible] rate of £150.

Bolingbroke Hospital, W [illegible] Hon. Surgeon to Ear, Nose and Th [illegible] Pathologist.

Bootle General Hospital.—Cas. O. At rate of £150.

Bradford Municipal General Hospital, St. Luke's.—H.P.'s and H.S.'s. Each at rate of £150.

Brighton Sanatorium and Infectious Disease Hospital.—Jun. Res. M.O. At rate of £150.

Chelmsford and Essex Hospital.—Two Res. M.O.'s Each £150.

Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall, Great Barrow.—H.P. At rate of £100.

Durham County Hospital.—H.S. £150.

East Ham Memorial Hospital, Shrewsbury-road, E.—H.P. At rate of £150. Also H.S. and Cas. O. At rate of £120.

Golden-square Throat, Nose and Ear Hospital, W.—Hon. Anæsthetist.

Greenwich, Dreadnought Hospital.—H.P. and H.S. Each at rate of £110.

Grimsby and District Hospital.—H.S. £200.

Guernsey States Mental Institutions.—Mental Officer. £800–£1000.

Hampstead General and N.W. London Hospital, Haverstock-hill, N.W.—Cas. Surg. O. for Out-patient Dept., Bayham-street. At rate of £100.

Hospital for Tropical Diseases, Endsleigh-gardens, W.C.—H.P. At rate of £120.

Leicester Royal Infirmary.—Two Cas. H.S.'s. Each £125.

Liverpool, Alder Hey Children's Hospital.—Res. Asst. M.O. £200.

Liverpool, Mill-road Infirmary.—Med. Supt. £1000.

Liverpool Stanley Hospital.—Two H.S.'s. Each at rate of £100.

L.C.C.—Temporary District M.O.'s. £140–£200. Pathologist at Group Laboratory, Mile End Hospital. £1100. Also Asst. Pathologist to Group Laboratories. Each £650.

London Lock Hospital, 283, Harrow-road, W.—Res. M.O. At rate of £175. Also Surg. Reg. £100.

Manchester, Ancoats Hospital.—Res. Surg. O. £200. Also Orthopædic H.S. At rate of £100.

Manchester Ear Hospital, Grosvenor-square.—Res. H.S. £120.

Manchester Royal Children's Hospital, Gartside-street.—Two Asst. M.O.'s for Out-patients' Dept. Each at rate of £150.

Manchester Royal Eye Hospital.—Jun. H.S. £120.

Manchester, St. Mary's Hospitals.—Res. Surg. O. for High-street Hospital. £175. Also Two H.S.'s for Whitworth-street West Hospital. Each at rate of £50.

Manchester, Victoria Memorial Jewish Hospital.—Res. Surg. O. £200. Also Jun. H.S. and Res. M.O. Each at rate of £125.

Miller General Hospital, Greenwich-road, S.E.—Res. Surg. O. and Reg. £250. Also H.P. £100.

National Temperance Hospital, Hampstead-road, N.W.—Hon. Asst. Physician.

Newcastle-upon-Tyne, City Hospital for Infectious Diseases.—Res. Med. Asst. £350.

Newcastle-upon-Tyne, Hospital for Sick Children.—H.P. Also Sen. and Jun. H.S. Each at rate of £100.

Northampton General Hospital.—H.P. and H.S. Also H.S. to Ear, Nose and Throat Dept. Each at rate of £150.

Northwood, Mount Vernon Hospital.—Res. M.O. £250. Also Asst. for Radio Therapeutic Dept.

Nottingham General Hospital.—H.P. At rate of £150.

Princess Beatrice Hospital, Richmond-road, Earl's Court, S.W.—Res. M.O. At rate of £100.

Princess Louise Kensington Hospital for Children, St. Quintin-avenue, N. Kensington, W.—H.S. At rate of £75.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W. Asst. to Pædiatrician and M.O. to Infant Consultation Centre. 1½ gns. per Clinic.

Queen's Hospital for Children, Hackney-road, E.—H.P. and Cas. O. Each at rate of £100.

Radium Institute, Ridinghouse-street, W.—Res. Surg. Reg. At rate of £250.

Royal National Orthopædic Hospital, 234, Great Portland-street, W.—H.S. At rate of £150.

Royal Northern Hospital, Holloway, N.—H.S. At rate of £70.

St. Leonards-on-Sea, Buchanan Hospital.—Sen. and Jun. H.S. At rate of £175 and £125 respectively.

St. Marylebone General Dispensary, 30, Marylebone-lane, N.W. Gynæcologist.

St. Paul's Hospital for Diseases of the Genito-Urinary Organs and Skin, Endell-street, Holborn, W.C.—H.S. At rate of £150.

St. Peter's Hospital for Stone, &c., Henrietta-street, W.C.—H.S. At rate of £75.

Salford Royal Hospital.—H.P. and H.S. Also Cas. H.S. Each at rate of £125.

South Africa, Central Hospital, Bloemfontein.—Radiologist. £900.

Stockport Infirmary.—Secretary-Superintendent. £500.

Swansea General and Eye Hospital.—H.P. At rate of £150.

Swindon and North Wilts Victoria Hospital.—Res. M.O. At rate of £125.

University College Hosp., Gower-street, W.C.—Asst. Obst. Surg.

Walsall Manor Hospital.—Asst. M.O. £350.

West Bromwich, Hallam Hospital.—Res. H.P. At rate of £200.

West London Hospital, Hammersmith-road, W.—H.P. Two H.S.'s to Spec. Depts. Also Res. Anæsthetist. Each at rate of £100.

Weston-super-Mare General Hospital.—Res. H.S. £150.

Wolverhampton Royal Hospital.—H.P. Also H.S. for Ear, Throat and Nose Dept. At rate of £125 and £100 respectively.

York County Hospital.—Res. Anæsthetist and Asst. H.S. £150.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Woolpit, Suffolk.

INDEX TO "THE LANCET." VOL. II., 1932

The Index and Title-page to Vol. II., 1932, which was completed with the issue of Dec. 31st. is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of The Lancet, 7, Adam-street, Adelphi, London, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

panel committee for the burgh of Glasgow should consist of 56 persons instead of the former number of 30. The increase was authorised to provide, among other things, for the fuller representation of medical practitioners in the city, whose numbers have very considerably increased since the original regulations were made.

Pit-head Baths

Mr. PARKINSON asked the Secretary for Mines the number of mines in England and Wales that had pit-head baths; and what further action was being taken to increase the facilities for washing and cleaning at the pit-heads.—Mr. E. BROWN replied: 98 mines in England and Wales (besides 28 in Scotland) have pit-head baths in use, and bath installations are in course of erection under the Mining Industry Act, 1926, at 35 other mines in England and Wales and 10 in Scotland. These numbers exclude baths for mine officials only. According to present plans, from 30 to 35 additional mines will be provided with baths annually under the Mining Industry Act, 1926.

Use of Skimmed Milk in Chocolate Manufacture

Sir PATRICK FORD asked the President of the Board of Trade whether he was aware that the importation of skimmed milk into this country on advantageous terms as compared with full cream condensed milk or milk powders was discouraging the manufacture of milk chocolate of a high nutritive value in favour of milk chocolate of a low nutritive value; and if he would consider a marking order to distinguish the two kinds of milk chocolate or some other method of encouraging the manufacture and sale in this country of the more nutritive variety.—Mr. RUNCIMAN replied: There is no power under the Merchandise Marks Act to make an order of the kind suggested. Questions of quality in relation to foodstuffs are more within the province of the Minister of Health.

Men Rejected for the Defence Services

Mr. LUNN asked the Financial Secretary to the War Office how many men who offered themselves for the Army during 1931 and 1932 were rejected on medical or other grounds.—Mr. DUFF COOPER replied: The figures for the recruiting year 1930–31 were 82,682 men served with notice papers and 46,818 rejected. The corresponding figures for 1931–32 were 70,418 and 41,667. The hon. Member will find these and other figures relating to recruiting in the General Annual Report on the British Army which will be in the possession of members in a few days.

Mr. T. WILLIAMS asked if the hon. gentleman attributed this large volume of rejections to a higher standard of military requirements, or was their rejection due to the continuous deterioration in the physique of the manhood of the country.

Mr. DUFF COOPER: No, I do not think that any such conclusion could be drawn from these figures. The standard does go up and down in different districts in proportion to the number of recruits that have been obtained.

Mr. LUNN asked the First Lord of the Admiralty how many men who offered themselves for the Navy during 1931 and 1932 were rejected on medical and other grounds.—Lord STANLEY (Parliamentary Secretary to the Admiralty) replied: As the Admiralty require only about one-fourteenth of the total number who offer themselves for the Royal Navy and Royal Marines, only the very best men are taken. In the financial year 1930–31, 43,453 men offered themselves. Of these 38,028 were rejected by recruiters for miscellaneous causes (including obvious physical defects) and 2451 on examination by medical officers. The comparable figures for 1931–32 are 47,054, 41,063, and 2781.

Mr. LUNN asked the Under Secretary of State for Air how many men who offered themselves for the Air Force during 1931 and 1932 were rejected on medical or other grounds.—Sir VICTOR WARRENDER (Vice-Chamberlain of the Household) replied: The figures for men recruits for the calendar year 1931 were as follows: application forms completed, 11,321; applications taken up, 5914, of which 3768 were rejected. The corresponding figures for 1932 were 8265, 2042, and 1255. It should be added that the requirements in 1932 were much below those of 1931.

Mr. LUNN asked if the answers to all these questions did not show that they were getting towards a C3 population. (Cries of "No.")

No answer was given to this question.

QUEEN'S INSTITUTE OF DISTRICT NURSING.—At the annual meeting of the council last week it was reported that since December last 22 associations had been affiliated, and that notwithstanding adverse industrial conditions 12 new ones were formed last year in Durham and Lancashire. Steps are being taken for the organisation of a county nursing association for Middlesex.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, March 7th.—8.30 P.M., PATHOLOGY. Laboratory Meeting at the National Institute for Medical Research, Hampstead, N.W. Short Communications; Mr. W. J. Elford and Dr. C. H. Andrewes: Observation on the Neutralisation of Phages by Antisera. Miss W. I. Strangeways: *Streptobacillus moniliformis* Infection of Mice. Dr. C. H. Andrewes: Antigenic Specificity of Fowl-tumour Viruses. Demonstrations: Dr. W. E. Barnard: The Virus of Canary Pox. Dr. F. M. Burnet: Inclusion Bodies in Canary Pox. Dr. A. Clark: Effects of a Sapotoxin Isolated from *Xanthosoma atrovirens* on the Kidney of the Rat Sir Henry Dale (for Dr. E. Schuster): Apparatus' Continuous Slow Infusion. Mr. P. Hartley: Demonstration of Biological Standards. Prof. E. Hindle and Dr. P. Bruce White: *Precipitin Reactions* with Specific Substances from Spirochætes. Dr. W. E. White, Dr. M. K. McPhail, Dr. M. Hill, and Dr. A. S. Parkes: Methods of Performing Hypophysectomy in Animals. 8.30 P.M., ORTHOPÆDICS AND SURGERY. Discussion: Acute Suppurative Arthritis of the Knee-joint. Openers: Mr. V. H. Ellis and Mr. R. W. Butler Orthopædics, and Mr. P. H. Mitchiner Surgery.

WEDNESDAY.—5 P.M., SURGERY: SUBSECTION OF PROCTOLOGY. Clinico-pathological Meeting. Specimens Mr. Cecil A. Joll: 1. Carcinoma of Colon from a Girl aged 17. 2. Inflamed Diverticulum of the Cæcum Simulating Acute Appendicitis.

FRIDAY.—5.30 P.M., CLINICAL. (Cases at 4.30 P.M.) Dr. Hugh S. Stannus: Addison's Disease. 5 P.M., OPHTHALMOLOGY. Clinical Meeting at St. Bartholomew's Hospital, E.C. Demonstration: Mr. J. W. Tudor Thomas: A Projection Protractor for Use with a Bjerrum Screen. Cases and Specimens: Mr. Humphrey Neame: 1. Familial Macular Disease in Twins aged 11 Years. 2. Cysts of the Retina with Cholesterin Crystals in or behind the Retina. Mr. H. B. Stallard: Specimens of Metastatic Carcinoma in the Choroid.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, March 6th.—9 P.M., Mr. V. Zachary Cope: *Pathology of Acute Abdominal Disease.* (Last Lettsomian lecture.)

HARVEIAN SOCIETY OF LONDON.

THURSDAY, March 9th.—8.30 P.M. (at Paddington Town Hall), Prof. William Wright: a Pre-Harveian Lecture on the Anatomy and Physiology of the Central Nervous System. (Harveian lecture.)

WEST KENT MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, March 10th.—8.45 P.M. (Miller General Hospital, Greenwich), Dr. W. S. C. Copeman: Spa Treatment and Medical Hydrology.

SOUTH-WEST LONDON MEDICAL SOCIETY, Bolingbroke Hospital, Bolingbroke-grove, Wandsworth Common, S.W.

WEDNESDAY, March 8th.—9 P.M., Clinical Meeting.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY, 11, Chandos-street, W.

THURSDAY, March 9th.—8.30 P.M., Mr. W. McAdam Eccles: Psychological Surroundings of the Surgical Patient.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

WEDNESDAY, March 8th.—8 P.M., Mr. J. L. Musgrave: Recent Developments in the Warming and Ventilation of Buildings.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

TUESDAY, March 7th, [illegible] SDAY.—5 P.M., Dr. Charles New[illegible] of the Gall-bladder and its Functional Abnormalities. (Goulstonian lectures.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, March 6th, to SATURDAY, March 11th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square. Practical Problems in Medicine and Surgery. Lecture by Mr. C. *Price Thomas on Empyema* at 4 P.M. on Tues. (Free to Members and Associates of the Fellowship of Medicine.)—NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W. Evening M.R.C.P. Course. Mon. and Fri., at 8 P.M.—ROYAL WATERLOO HOSPIT[illegible] S.E. 1. Post-graduate Course [illegible] næcology. All day.—ROY[illegible] HOSPITAL, 234, Great Portland-street, W. *Post-graduate Course in* Orthopædics. *All day.—BRITISH RED CROSS* CLINIC FOR RHEUMATISM, Peto-place, N.W. Evening Course in Rheumatism. Tues. and Thurs. at 8.30 P.M. (Courses, &c., open only to Members and Associates of the *Fellowship.)*

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.

MONDAY, March 6th.—10 A.M., Medical Wards, Skin Clinic. 11 A.M., Surgical Wards. 2 P.M., Surgical Wards, Gynæcological and Eye Clinics. 4.15 P.M., Lecture: Dr. R. Ironside: Anæsthetics.

TUESDAY.—10 A.M., Medical Wards. 11 A.M., Surgical Demonstration. 2 P.M., Throat Clinic. 4.15 P.M., Lecture: Mr. Hamblen Thomas: Deafness.

WEDNESDAY.—10 A.M., Medical Wards, Children's Clinic. 2 P.M., Eye Clinic. 4.45 P.M., Venereal Diseases.

NOTES, COMMENTS, AND ABSTRACTS

JOHN HUNTER: THE LANGUAGE OF FACTS

Sir CRISP ENGLISH, in delivering the Hunterian oration of the Hunterian Society, at the Mansion House last Monday, took as his title the Language of Facts, which he said was the great lesson of John Hunter's life. His letters to his friend Jenner illustrated his wide and insatiable interest in all living things. Every page of his life showed that he stood for science, truth, and reality. He had been the enemy of wild imagination and crude theory. His great work had been the discovery and collection of facts relating to medicine and surgery. He had initiated and handed on the language of facts.

Great advances had been made since Hunter's day, but a great field of research still awaited discovery. Research called for three groups of men, as Lord Balfour had pointed out: the research worker, the man who applied discovered facts where they were needed, and the man who used them for the benefit of mankind. Research workers must be men with open minds, acute imagination, and the habit of trying. John Hunter's were seldom born and never made. Medical research should be limited to the chase of facts which would help in the fight against disease. All workers should be kept in contact, and overlapping must be prevented. Research and clinical work must go hand in hand. Much greater facilities for post-graduate work would be demanded in the near future, for general practitioners found it extremely difficult to keep in touch with new advances.

Practitioners must weigh and face facts day by day, said Sir Crisp English, both for themselves and for their patients. The first step in a difficult case was to collect all available facts; the second was to draw deductions; and the third to express an opinion. This order should never be varied. Bluffing was no good in medicine. It was of vital importance all through to check the principles on which diagnosis was based and not to be led away by imagination, impressions, and the stories told by relations and friends. Facts must not be mixed with deductions. The people of this country showed an increasing tendency to ignore medical facts in favour of the phantasies of modern cults. Any new cure for cancer attracted a large crowd of adherents. These cults knew not the language of facts; they seldom kept records and seemed to know no failures. Argument was usually a waste of time, but if inevitable it should turn on the question of facts, first as to diagnosis and secondly as to cure.

The great work initiated by Hunter would never cease. "New" methods would soon be old, but the facts would survive and lead to yet more discoveries. There had been a wonderful accumulation in recent years of new facts leading to the cure of disease. It was largely John Hunter's language of facts that made the medical profession ring true.

In the subsequent discussion Sir WILLIAM WILLCOX remarked that in Hunter's time the opinion of a medical man of personality and power had been accepted without question, but now it had to be backed by laboratory investigations. One of the great charms of medicine to-day was that the clinical diagnosis could be criticised by the language of facts. In some countries hundreds of facts were collected before the physician attempted to make his diagnosis and he was apt to get lost among them, but the English physician owed his admitted supremacy in diagnosis to his habit of using his clinical sense first.

Mr. A. E. MORTIMER WOOLF said it was not always wise to use the language of facts. But the legend of Hunter's unpopularity with his colleagues was not altogether accurate; new evidence would shortly be available to show that Hunter had been much honoured and admired by his contemporaries. The extraordinary accuracy of his work in relation to the atmosphere of chicanery and quackery of the time was an astonishing thing.

Dr. J. CAMPBELL MCCLURE pointed out that many people were content to live on facts as they had been taught them and pose as the great apostles of the accepted doctrine. The great man regarded each fact as a stimulus to reach on to more, and as another small stone to set in the temple of knowledge—not as an achievement to himself.

METAL FITTINGS IN HOSPITALS

AMONG the many new materials made available for industrial purposes during the present century, metals, which within the memory of most middle-aged people were only chemical curiosities, and alloys in which they form essential constituents, occupy a prominent place. Aluminium, nickel, chromium, tantalum, tungsten, the strong light alloy duralumin, the non-rusting chromium steels, the highly magnetisable cobalt steels are outstanding examples. The demand for a high standard of cleanliness, with a minimal expenditure of labour in hospitals, has led to the utilisation of many of these new products. One of the newer alloys has a rather curious origin. Monel metal is an alloy containing about 60 per cent. of nickel, 33 per cent. of copper and iron, with small quantities of other metals to make up the remaining 7 per cent. As it is obtained by the unusual process of smelting a natural ore, its composition is variable, but only within small limits. Like most alloys containing much nickel it is white ("white gold" is a gold-nickel alloy), not easily tarnishable, and will stand the action of most of the liquids likely to be spilt upon it in a hospital ward. For instrument handles, furniture, utensils for ward and operating theatre, besides kitchen fittings, food trolleys, and sterilising apparatus it appears to be very suitable, possessing the advantage over aluminium, for some of these objects, of superior hardness and a nicer surface, whilst it is much more amenable to the ordinary methods of the metal worker than stainless steels. It appears from a still somewhat limited experience of its use to be a very satisfactory material. Chromium plating has achieved great popularity both in hospitals and homes for taps, towel rails, and such fixtures. It is necessary to impress on all who use it that gentle rubbing with a cloth is all the cleaning needed, as the coating of chromium is very thin and will retain its polish without the use of abrasive materials which will soon remove it. To be satisfactory, chromium should not be plated directly on steel, but fairly heavy layers of copper and nickel, or nickel alone, should first be plated and the nickel be highly polished before the final thin layer of chromium is applied. If this is not done the coating may be discontinuous and, under the influence of atmospheric corrosion affecting the under metal, the chromium will flake off. A case of this kind came under our notice some time ago, but the conditions for success are now well known. It is claimed that the chromaloid process is particularly suitable for the protection of car parts which not only have to stand all weathers, but are subject to much abrasion from grit in the air.

SECOND-HAND MEDICAL BOOKS

Menno Hertzberger, of the Internationaal Antiquariaat, Amsterdam, has issued a useful catalogue (No. 66) of "Books on the History of Medicine." This catalogue includes a few finely-printed books, but is chiefly valuable for the number of indispensable reference books listed in it, such as Choulant's "Bibliographie der anatomischen Abbildung" or Osler's "Incunabula medica." There are also some important library catalogues and special bibliographies, besides a variety of reprints and facsimiles, as well as recent medico-historical works. The prices seem very reasonable. An attractive series of illustrated "Dance of Death" books includes a Paris-printed "Book of Hours" of 1502, priced at 375 guilders, several unusual seventeenth and eighteenth century editions, and a number of modern reproductions.

MEDICAL NEWS

University of Cambridge

On Feb. 24th the following degrees were conferred :—

B.Chir.—G. A. W. Whitfield (by proxy) and S. F. L. Dahne.

University of London

At a meeting of the Senate on Feb. 22nd, Mr. J. B. S Haldane, F.R.S., was appointed to a university chair of genetics tenable at University College.

Since 1922 Prof. Haldane has been reader in biochemistry in the University of Cambridge, and since 1927 he has been head of the genetical department of the John Innes Horticultural Institution. In 1930 he was elected Fullerian professor of physiology at the Royal Institution.

Prof. Cyril Burt, D.Sc., was appointed to deliver the Heath Clark lectures for 1933, and Prof. W. Blair Bell, F.R.C.S., was appointed representative of the university on the court of the University of Liverpool.

It is announced that the King intends to lay the foundation-stone of the new university buildings on June 26th.

The following have been appointed staff examiners in the subjects of examination for medical degrees for 1933 :—

Anatomy : Prof. Edward Fawcett and Prof. Thomas Yeates. Bacteriology : Prof. C. H. Browning. Forensic Medicine and Hygiene : Dr. G. Roche Lynch, Prof. M. E. Delafield, and Dr. J. H. Ryffel. Medicine : Prof. F. S. Langmead, Dr. M. A. Cassidy, Dr. Anthony Feiling, Prof. W. E. Hume, and (associate examiners) Dr. Adolphe Abrahams, Dr. T. Izod Bennett, Dr. C. M. Hinds Howell, and Dr. E. Bellingham Smith. Mental Diseases and Psychology : Dr. Henry Yellowlees and Dr. Edward Mapother. Neurology : Dr. C. P. Symonds and Dr. F. M. R. Walshe. Obstetrics and Gynæcology : Dame Louise McIlroy, Mr. J. D. Barris, Mr. D. W. Roy, Prof. J. M. Munro Kerr, Prof. F. J. Browne, and (associate examiners) Mr. Stanley Dodd, Mr. William Gilliatt, Prof. John McGibbon, Mr. Frank Cook, and Mr. Leslie Williams. Oto-Rhino-Laryngology : Mr. W. M. Mollison and Mr. W. G. Howarth. Pathology : Prof. James McIntosh and another, and (associate examiners) Prof. J. S. Dunn and Dr. W. D. Newcomb. Pharmacology : Prof. W. J. Dilling and Dr. Eleanor Scarborough. Physiology : Prof. B. J. Collingwood and Dr. L. E. Shore. State Medicine and M.D. Hygiene : Prof. W. W. Jameson and Dr. Charles Porter. Surgery : Mr. N. C. Lake, Prof. E. D. Telford, Prof. C. C. Choyce, Mr. V. Zachary Cope, Mr. G. T. Mullally, and (associate examiners) Mr. R. Davies-Colley, Mr. J. Paterson Ross, Mr. P. H. Mitchiner, and Mr. H. C. Edwards. Tropical Medicine : Colonel W. P. MacArthur.

Royal Institution

Prof. Elliot Smith's course of afternoon lectures on the Evolution of the Mind, announced for March 16th, 23rd, 30th, and April 6th, and his Friday evening discourse on March 24th, have been postponed because of illness.

Post-graduate Work in Berlin

Medical visitors to Berlin are invited to apply to the Medizinische Informationsbüro at the Kaiserin-Friedrich Haus, Robert Koch-Platz 7, Berlin, N.W.7, which is ready to supply information about hospitals, clinics, public health, and continuation courses. The office is, it is stated, of a semi-public nature, and all information is furnished impartially and gratuitously.

Royal Medical Benevolent Fund

At the meeting held in January the committee voted 84 grants amounting to £2089. At the February meeting £693 was voted to 34 applicants.

The following are particulars of a few cases helped :—

M.B., aged 39. Married, two sons, aged 12 and 9. The applicant is suffering from disseminated sclerosis, and is totally incapacitated from following any occupation ; he is unable to move one step without help. It was found that his total income was £123, with which he has to maintain himself, his wife, and two sons. Fund voted £40 in four instalments, and assistance is being obtained from other societies.

M.B., aged 69. Married, wife aged 62. Applicant is suffering from macular choroiditis in an advanced stage in both eyes, and four years ago had to sell his practice. Since then he has been living on his capital, which is now almost exhausted. Income for past 12 months was £101. Fund voted £40.

Widow, aged 41, of M.B. Husband contracted septic pneumonia, and died at the age of 36, leaving the widow with two children, girl aged 9 and boy aged 5. The boy has recently developed epilepsy. Total income £1 a week. Fund voted £26 in four instalments, and is obtaining help from other societies.

Widow, aged 46, of M.R.C.S. Husband died in December, 1932, at the age of 56. He was a retired Lieut.-Colonel in the R.A.M.C. The widow is left with an army pension of £90 and a children's allowance of £16 for each of the two youngest—making a total of £132. Fund voted £26 in four instalments.

Cheques should be made payable to the hon. treasurer of the fund, 11, Chandos-street, Cavendish-square, London, W.1.

Chicken-pox has been made notifiable in the City of London for 12 months commencing on March 18th.

British Institute of Philosophy

The Dean of St. Paul's will deliver an address on Religion, Science, and Philosophy at 8.15 P.M. on Tuesday, March 14th, at University College, Gower-street, London, W.C. Tickets may be had from the institute's director of studies, University Hall, 14, Gordon-square, W.C.1.

Course on Disorders of Digestion

A fortnight's course on the medical and hydrological treatment of digestive and nutritional disorders will begin on May 1st at the Hôpital Necker, Paris, under the direction of Prof. Maurice Villaret. There will be a study tour to Vichy from May 13th onwards. Particulars may be had from the laboratoire d'hydrologie of the Faculté de Médicine de Paris (École pratique).

Royal Sanitary Institute

On Friday, March 17th, at 4.30 P.M., a sessional meeting will be held, in conjunction with the Yorkshire branch of the Society of Medical Officers of Health, in the Winter Gardens, Royal Baths, Harrogate. Dr. J. A. Charles, medical officer of health for Newcastle-on-Tyne, will open a discussion on the Problem of Bacillary Dysentery, and Lieut.-Colonel J. A. Dixon, chief veterinary officer for Leeds, a discussion on Food Inspection from the administrative Aspect.

Tata Research Scholarships in Hæmatology

In supplement to the announcement made in our issue of Feb. 18th (p. 376) it is explained that the number of scholarships offered for research on diseases of the blood has now been increased to four, and that they are open to candidates from all nations, including India. Nominations in respect of Great Britain and the Dominions will be made to the trustees in Bombay by an advisory committee in London. Applications may be addressed to Dr. H. S. Patel, Capel House, 62, New Broad-street, London, E.C.2; Prof. A. Vacha, Calvinstrasse 27, Berlin, N.W.40; or directly to the trustees, c/o Messrs. Tata Sons, Ltd., Bombay House, Bruce-street, Fort, Bombay.

Glasgow Hospitals

In 1932 the ordinary expenditure of Glasgow Royal Infirmary exceeded the ordinary income by £26,000; the similar deficit of the Glasgow Western Infirmary was £14,900. The Royal Infirmary's in-patients were 16,313 and they stayed 17·3 days on the average. There were nearly 116,000 out-patients, whose attendances increased so considerably that the existing accommodation "will have to be replaced without delay by more commodious and modern premises." At the Western Infirmary and the David Elder Infirmary, which is administered as a unit of the main institution, there were last year 12,893 in-patients, and over 48,000 out-patients, also a large increase. The average residence was 17·83 days and the daily cost 7*s.* 5*d.*, a fractional reduction. The average cost per patient was £6 13*s.* The accommodation in the pathological department has been gradually becoming more and more taxed, and is now so deficient in various respects that extension will have to be considered at an early date.

Fellowship of Medicine and Post-Graduate Medical Association

A debate will take place on Thursday, March 9th, at 9 P.M. at the Medical Society of London (11, Chandos-street, Cavendish-square, W.) on the motion that Immediate Operation is indicated in every case of "Acute" Appendicitis. Lord Moynihan, president of the Fellowship, will occupy the chair, and the principal speakers will be Mr. R. M. Vick and Mr. W. H. Ogilvie for the motion, and Mr. V. Zachary Cope and Mr. R. J. McNeill Love against the motion. Members and associates of the Fellowship and their friends are invited to be present. On Tuesday, March 21st, at 8.30 P.M., Mr. R. Lindsay Rea will give a demonstration on the Fundus Oculi at the in-patient department of the West End Hospital for Nervous Diseases, Gloucester-gate, London, N.W. Forthcoming courses include a course on psychological medicine at the Maudsley Hospital, Denmark-hill, London, S.E., from March 14th to April 7th ; a course in neurology at the West End Hospital for Nervous Diseases, 73, Welbeck-street, London, W., from March 13th to April 8th ; and a course in proctology at the Gordon Hospital, Vauxhall Bridge-road, London, S.W., from March 20th to March 25th. Further particulars of the courses may be had from the secretary of the Fellowship, 1, Wimpole-street, London, W. 1.

ADDRESSES AND ORIGINAL ARTICLES

THE TREATMENT OF ENLARGED TONSILS IN CHILDREN*

BY T. B. LAYTON, D.S.O., M.S. LOND., F.R.C.S. ENG.
SURGEON IN CHARGE OF THE THROAT AND EAR DEPARTMENT, GUY'S HOSPITAL, LONDON

WE may divide enlargement of tonsils into those cases where the increase is a part of an increase of all the lymph tissue of the body and those cases where it is a local manifestation. It is clear that in the former group it is our business to treat the general cause of the general enlargement. I think the commonest condition under which this is found is that described by the late Dr. Eustace Smith[1] as mucous disease of children, but which is now included as a part of the wider problem known as the exudative diathesis.

For the isolated increase of lymphoid tissue in the tonsils the treatment has for many years been operative. Before we discuss the indications for operative treatment let us consider whether there is, as yet, any alternative treatment that will take its place. There is the burning away of the tonsil used by Morell Mackenzie and reintroduced by Irwin Moore. There is the slow destruction by diathermy advocated, in selected cases, by Dan McKenzie, and there is the emptying of the tonsils by the suction method of Waring. All these methods necessitate repeated séances under local anæsthesia or without anæsthesia with the mouth open, and for this reason are unsuitable during childhood. There is the rapid diathermy at a single sitting which is either a modification of technique or, if different in principle, is yet unproven to have fewer disadvantages than operation by other methods. There is the use of X rays and of ultra-violet light which as yet have not been shown to be efficient. When a method has been devised of destroying or removing the tonsil which is as efficient as operation, without there being any increase of risk or unpleasantness, then I am willing to give up operating on children's tonsils. But I maintain that no such substitute for operation has as yet been found.

Reasons for Operation

In effect then we are met here to consider the question of the removal of enlarged tonsils in children. The answer, in my opinion, is that to-day this is only necessary on the rarest occasion. The enlarged tonsils for which the operation of tonsillotomy was devised are now seldom seen, and I remember but one such case in the last five years. This statement may sound sweeping; it is, and it is meant to be. For I wish to sweep away a misunderstanding with regard to the tonsil problem that lies, I believe, at much of the excess of operation that so many deplore.

It comes to this, we have changed our indications for the removal of tonsils without changing our title; and I believe we have not changed our title because the modern concept for removal is not definable in any strict terms, it is not describable by any pretty adjective, and it is incapable of diagnosis in the accepted sense. In other words, it is neither a clinical nor a pathological entity; some even deny, as we shall learn later, that it is an anatomical entity.

Personally I suspect that the condition of "enlarged" tonsils was not as common in the early nineteen hundreds as it was in the 'eighties of the last century; but I am confident that we then saw more cases than we do to-day. If we read the description in Morell Mackenzie's book[2] which was published in 1880 we realise that he is describing a clinical picture that is seldom seen to-day. I need only quote his description of the tonsils to realise this. "The augmentation of volume of the tonsils varies in different cases. They are often the size of a chestnut, but sometimes attain the dimensions of a bantam's egg, and in rare instances they are nearly the size of a hen's egg." The great indication for operation was obstruction to breathing in the faucial region.

This disappearance of the "enlarged tonsils" is not, I believe, the only change that has occurred in the upper respiratory tract during the present century; but the other parts of this subject are not germane to the present discussion.

History of Tonsillotomy

Let us consider the matter from the history of the tonsil operation. Though guillotines were devised in 1827, I do not think the operation was common before the 'nineties. It was then a tonsillotomy performed for the enlarged tonsil with a view to removing the redundant lymph tissue. In the great majority of such cases the operation was efficient, but in a few cases cicatrices around the openings of the crypts led to trouble and in the early years of this century surgeons were having great difficulty in removing such stumps. They therefore decided to remove the tonsil completely in the first instance. Since then there have been two landmarks in the history of tonsillar operative surgery.

The first was when G. E. Waugh,[3] of the Hospital for Sick Children, Great Ormond-street, in 1909 published his technique for removal of the tonsils by dissection. This was a very great advance and has standardised the operation for this country. All surgeons to-day are indebted to Waugh when they set out to dissect a tonsil.

Unfortunately it was attended by two disadvantages. It made the operation easy. Anyone with a good enough pair of hands, who would give up time to practising it, could learn to do it.

The second disadvantage was that too much lymph tissue was removed. The original operation of tonsillotomy was merely for the removal of hypertrophied lymphoid tissue. This idea led to the removal of the lingual prolongation of the tonsils down and even on to the tongue, and an insistence upon the necessity for removing this has always been a tenet of this school. It led to two results: a failure to recognise the implications of the new conception that was then arising with regard to the reason for the removal of tonsils, and a refusal to consider the second landmark of tonsillar operative surgery. This came in 1910, when S. S. Whillis and F. C. Pybus,[4] of Newcastle, published their method of enucleation of the tonsils with the guillotine.

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* The opening paper of a discussion at the South-West London Medical Society on Dec. 14th, 1932.

[1] On the Wasting Diseases of Infants and Children. London, 1884, 4th ed., chap. vi.

[2] Diseases of the Nose and Throat. London, 1880, vol. i., pp. 60–69.

[3] THE LANCET, 1909, i., 1314.

[4] Ibid., 1910, ii., 875. At about the same time Sluder of St. Louis, Mo., published a very similar technique. According to our insular custom of ignoring any new thing from home while hailing that from abroad, the method is often called Sluder's although that of Whillis and Pybus is usually employed.

PHYSICAL THERAPY

A FASCINATING little work on the growth of the four sections of physical therapy, divided into massage and exercises, water, electricity, heat and light, has been issued as one of a series of primers on the history of medicine.[1] Dr. Coulter has delved into ancient as well as into modern writings. Sun worship and sun therapy is traced from the Chaldean and Egyptian times through the Greek and Roman to the Rollier Clinic at Leysin. The indications for massage and mobilisation are set out carefully by Hippocrates, and these measures were used extensively by Galen. In the seventeenth century Quellmaltz in Germany and Andry in France started work on orthopædic lines and included massage and movements in their teaching. All the older physicians seem to have attempted to apply vigorous exercises to the treatment of a variety of sedentary and plethoric ailments. Their patients must have been of hardier calibre than some of the nerve-strained patients who consult us nowadays. Occupational work and exercise seem to have been used in certain asylums in the late eighteenth century both in England and France.

The chapters on water and electricity yield many interesting sidelights on mediaeval and eighteenth century procedure. Dr. Coulter suggests that electricity, rescued from quacks, is capable of much development as a therapeutic agent, and he expresses astonishment at the contrast between the use to which it has been put in commerce and the slow development of its medical application.

THE "ELPEY" BANDAGE

WE have received specimens of a new type of surgical bandage now placed upon the market by the Liverpool Packings Company, Nottingham Buildings, 19, Brunswick-street, Liverpool. These bandages have new features which can be warmly commended. They are of the crepe type, and made of rubber, so that the bandage by its elasticity can conform to the shape of the limb, and being self-adjusting painful constriction is avoided if swelling occurs after bandaging. The porous nature of the material provides for ventilation, while a slightly corrugated surface, described by the manufacturers as "knurled," is an insurance against slipping. For this reason the dressing is maintained in position without any pressure on a painful or inflamed area. The bandages can be boiled or sterilised in the usual manner without damage. It is stated that the bandages have been tested by practitioners and at institutions with good results. The conditions for which they are obviously useful will be sprains, varicose veins, and, perhaps especially, the annoying recurrent œdema met with in limbs and around joints which have been encased for a long period in plaster. The bandages are supplied in three weights, light, heavy, and medium, and they can be made of any width.

THE CICELY NORTHCOTE TRUST

THIS fund was given to St. Thomas's Hospital in 1909 to complete the system of social work which had been begun in the casualty and out-patient departments of the hospital four years earlier. In addition to routine social work amongst patients in the wards, and the follow-up work resulting therefrom, the Trust was designed to act as a pioneer in experimental ventures of its kind. The twenty-third annual report of the Trust has recently been published, and like its predecessors is a record of fine social service. Of the follow-up work in cancer patients during the year it is stated that 1185 have been kept under observation, 196 assisted, 901 visited (in some cases many times), 101 provided with extra comforts and extra nourishment, and 28 sent to homes for the dying. The Northcote Trust Hostel has admitted 40 girls during the year. The social service department of a hospital becomes more highly specialised and technical each year. Plans for the after-care of patients have to be made with greater speed; more technical work is needed on behalf of patients in connexion with the insurance societies, the Road Traffic Act, and other measures, whilst certain special departments involve special efforts. For example, the work of the diabetic clinic would be unproductive if arrangements could not be made to enable the patient to pay for the diet recommended and for the insulin needed. Year by year the Cicely Northcote Trust meets the increasingly heavy burden placed upon it. This year it starts with a debit balance in spite of rigorous economy and active efforts to raise more money. Its record of work is so fine that a curtailment would be deplorable.

MALARIOTHERAPY IN GENERAL PARALYSIS

Two Japanese workers, I. Omaru and H. Eguchi,[1] report the results of the treatment of 260 cases of general paralysis of the insane with tertian malaria. They claim 40 per cent. of complete remissions, 15 per cent. of incomplete remissions, 18 per cent. unchanged, and 8 per cent. modification in the clinical picture; the remainder of the patients died. The prospect of remission, they find, is good in the neurasthenic and expansive forms, but bad in the demented and depressive forms. The prognosis is favourable in the forms resembling manic-depressive psychosis, but unfavourable in those resembling schizophrenia, except the katatonic type. They found that patients of the pyknic physical type responded better than others. Research into 111 cases showed no special relationship between the blood picture and the clinical result. The Wassermann reaction in 30 cases was tested over a year, but there appeared to be no connexion between the blood picture and the disappearance of a positive result.

Births, Marriages, and Deaths

BIRTHS

CAIRNS.—On Feb. 21st, at St. John's Wood Park, N.W., the wife of Hugh Cairns, F.R.C.S., of a daughter.

GIBBERD.—On Feb. 21st, at Welbeck-street, W., the wife of G. F. Gibberd, F.R.C.S., of a son.

MARRIAGES

CHARLTON—SMITH.—On Feb. 22nd, at Hampstead, P. H. Charlton, M.B., to Margaret, only daughter of Mr. and Mrs. H. N. Smith.

CORR—BROWN.—On Feb. 22nd, at St. James's Church, Spanish-place, W., Dr. J. Patrick Corr, to Phyllis E. L. Brown, both of Brighton.

FERGUSON—WILSON.—On Feb. 21st, at the Parish Church, Chapel-en-le-Frith, by the Vicar, Rev. W. H. Green, Dr. Fergus R. Ferguson to Dr. Kathleen Wilson.

SMITH—STEWART.—On Feb. 18th, at St. Stephen's Church, Dulwich, K. P. Smith, L.D.S., R.C.S., of Alleyne, Petts Wood, to Beth, youngest daughter of Dr. and Mrs. H. M. Stewart, Dyffryn, Dulwich.

WARD-FARMER—CATCHPOLE.—On Feb. 21st, at St. George's Church, Portsmouth, Dr. Paul Ward-Farmer, M.B., M.R.C.P., to Sybil Ethel, the only daughter of Lieut.-Commander and Mrs. T. J. Catchpole, of The Hard, Portsmouth.

DEATHS

BALLANCE.—On Feb. 20th, 1933, at Westfield, Hatfield, Hertfordshire, Alaric Charles Ballance, M.A., M.B., B.Ch. Oxon., dearly loved husband of May Ballance, née Trowel, and only son of Sir Charles and the late Lady Ballance, aged 45.

BULL.—On Feb. 24th, at Clarges-street, London, William Charles Bull, F.R.C.S., in his 75th year.

GALI [illegible] ome in London, Major-General [illegible] K.C.M.G., C.B., late Colonel [illegible] s 81st year.

GRIF [illegible] I. Griffiths, F.R.C.S., aged 34, [illegible] Bristol, dearly loved son of [illegible] of Fairlawn, Portishead, Som.

JOH [illegible] ddenly, at Esslemont-road, [illegible] Johnston, M.D., F.R.C.P.E.,

MANN.—On Feb. [illegible] at [illegible] sby, Lincolnshire, Frederick William Slingsby Mann, M.R.C.S., aged 61.

MARSH.—On Feb. 26th, at Chelmsford, suddenly, Philip Henry Marsh, L.D.S., R.C.S. Eng., of Branwoods, Great Baddow, and Dorset House, [illegible]

O'DONOVAN.—On Feb. [illegible] athedral-road, Cardiff, Marshall J[illegible] L.R.C.S. (I.), L.K.Q.C.P.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths

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[1] Clio Medica. Physical Therapy. By John S. Coulter, M.D. New York: Paul B. Hoeber. 1932. Pp. 142. $1.50.

[1] Fukuoka Acta Med., December, 1932, p. 168.

THORACIC SURGERY

By H. Morriston Davies, M.D., M.Chir. Camb., F.R.C.S. Eng.

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LECTURE II.—COLLAPSE THERAPY *

Under the term "lung collapse therapy" are included all those methods whereby a collapse of the whole or a part of the lung is produced in order to arrest or heal disease. The most generally used of these methods is artificial pneumothorax, first suggested by Carson of Liverpool in 1822, but not put into actual practice till 1888 by Forlanini. Prior even to this, in 1885, de Cérenville attempted a very limited thoracoplastic operation in an endeavour to arrest hæmorrhage. Thoracoplasty did not, however, become a recognised stereotyped operation till 1911; though Spengler, in 1890, coined the term "extra-pleural thoracoplasty" for his rib-resection operation through a periscapular incision.

"Lung collapse therapy" includes also phrenicectomy and phrenic evulsion; operations which have become rapidly and increasingly popular since the variations in the anatomy of the phrenic nerve and the importance of the accessory phrenic were made clear by Felix in 1922.

Oleothorax, as a means of maintaining collapse of the lung is of even more recent date, and the appreciation of its value is due largely to the pioneer work of Bernou. He, however, was anticipated by de Carle Woodcock, who, as early as 1912, used paraffin oil and air for maintaining lung collapse.

Extrapleural pneumolysis, which is the freeing of the lung together with the parietal pleura from the chest wall in order to obtain a localised collapse, was first tried by Tuffier in 1892. It was not a success, because he relied on the air enclosed in the space to maintain the collapse. In 1910 he obtained satisfactory results by filling the space with fat. Three years later Baer tried paraffin as a filling. It is only recently that, with improved technique, the operation has begun to be regarded with favour by some surgeons.

Yet another operation which is being tried out is that of scalenectomy with division of the first rib, in an endeavour to supplement the effect of hemidiaphragmatic paralysis on the apex.

While there are other methods of producing lung collapse, these are the principal ones.

Objects of Lung Collapse

The most important of the benefits gained by collapsing a diseased lung is the obliteration of cavities, whether these are in the lung substance as in the case of tuberculous cavities and of abscess, or are dilatations of bronchi and bronchioles as in bronchiectasis. Collapse prevents the retention of secretions and the absorption of toxins. This is supplemented by the stasis of the blood and lymph circulations, which reduce absorption and the rate of the circulation of the toxins.

As a result of the lung collapse there is immobilisation of that organ, or a general or local diminution of movement: a state of rest which is particularly valuable in the treatment of tuberculosis. Yet another benefit is the reduction in the size of the lung; this allows of the necessary contraction of the pathological fibrous tissue, which is otherwise kept in a state of tension and therefore of chronic irritation.

It is possible here to give the general indications only for collapse therapy. When a case of pulmonary tuberculosis has been progressing for a certain length of time, mechanical changes develop. There is progressive fibrosis, there is rigidity, thickening, and dilatation of the bronchial tubes, and there is the formation of cavities in the lung substance. These changes can be satisfactorily compensated by the efforts of the body if the disease is arrested in the earlier stages of their development. Once, however, the mechanical changes are established, some form of collapse therapy is necessary if the cavities and other spaces are to be obliterated, and the strain of the contracting, pathological fibrous tissue relaxed. The presence of cavities, whether active and secreting or dry, should always be an indication for collapse therapy, provided there are no contra-indications.

Collapse therapy should be attempted, the condition of the opposite lung permitting, in every case of chronic or subacute pulmonary tuberculosis which is stationary but not healed, or which is progressing despite sanatorium régime; it is indicated even in a few cases of acute infection; it should be attempted also in every case of progressive multilobar, but mainly unilateral bronchiectasis, and in certain cases of lung abscess. Further, collapse therapy is indicated in all cases of hæmoptysis which is endangering life or which is repeated or is persistent.

Collapse therapy must also be considered in connexion with many cases of pulmonary tuberculosis in which it is not necessarily essential in order to save life, and in which sanatorium régime may quite possibly arrest the disease. It must be remembered that many patients, once they leave the sanatorium, cannot continue to lead the sheltered life they have experienced there. Their home conditions may be unfavourable; they may have to return to work before the healing processes have consolidated; the work and climate may be unsuitable. For others the time factor is of immense importance, and it is necessary to return to work or to the family free from infection, and at the earliest moment possible. For yet others, the threshold of resistance is so low that a relapse occurs on the least variation from the strictest routine.

Operations Causing Collapse

The various methods of collapse therapy differ greatly in certain important general principles. By some of the methods, such as phrenicectomy and thoracoplasty, the diminution in the lung volume is produced by a process of collapse only, and the collapse is obtained by a readjustment of the surrounding walls. By others no change is produced in these walls, but the alteration in lung volume is effected by the introduction of a foreign body. Examples of this are artificial pneumothorax, oleothorax, and extrapleural pneumolysis. Of these, the last two produce their result by a compression force. With artificial pneumothorax the effect is by collapse, only when there are no adhesions and no extensive consolidation or dense fibrotic changes in the lung; otherwise, in addition to the collapse, there is often some compression force used.

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By the old method a few very highly skilled surgeons could enucleate a proportion of tonsils with the guillotine, but were never quite sure of it. By the simple process of turning the guillotine round any average surgeon is able to enucleate the great majority of *all* tonsils and to know in which cases this is impossible. The method is more difficult to learn than dissection, it is not so showy, it needs as perfect an anæsthesia. By it, however, the tonsils can be removed as completely and more cleanly than by dissection. It does not, however, remove the lingual prolongation; but with the modern conception for the removal of tonsils not only is this not required, it is definitely considered an unnecessary interference.

I do not propose to discuss the two methods, but want to point out that they put in the hands of surgeons of different frames of mind methods for complete removal of the tonsils, and from that time they began to operate on younger and younger children and the number of operations insensibly went up until in 1914 it was, in my opinion, time "to stay our hands."[5]

The Tonsils as a Source of Sepsis

Why then do we remove tonsils to-day? Not because there is excess of lymphoid tissue but because the tonsils are "a source of sepsis." We postulate that there are living in the tonsil organisms harmful to the individual. It is not a clinical entity that can be diagnosed with accuracy, but a balance of probabilities. It is not a pathological entity, for the organisms present are various ones and cultivation can only show that any special organism was there at that moment. But it is an anatomical entity because it is at the bottom of the crypts that the source of sepsis lies, and removal of anything beyond the tonsil will have no advantage.

What are the criteria upon which you decide that tonsils are a source of sepsis? The criteria are two: the history of the case and the appearance of the tonsil. The history of the case is far more important than appearance of the tonsil. In 1912 Hajek of Vienna was teaching that if a person has three attacks of follicular tonsillitis in the year or two, with joint pains, the tonsils should come out. The older I get the more I am impressed by that teaching. With those cases of recurring follicular tonsillitis you are almost certain to get improvement from the removal of tonsils. When you do not get that history you are never certain that the desired improvement is going to come about. In my opinion children under the age of 5, 6, 7, or 8 should not have their tonsils removed if it can possibly be helped. They do not get acute follicular tonsillitis. They get droplet infection which gives them an inflammation of the upper respiratory tract and the tonsil takes a part in that infection. I do not think there is any doubt that when the tonsil takes its part in resisting that infection it is one of the most important factors in such resistance. I look upon the lymphoid tissue of the upper respiratory tract as one of the most important factors in enabling the child to develop its acquired immunity as distinct from the heredity immunity that it has when it is born. K. H. Digby[6] believes that the lymphoid tissue of the upper respiratory tract and particularly the tonsillar tissue actually makes the antibodies which cause that immunity. Practically it does not matter whether the tonsils are at that age simply filters to hold up the organisms or whether they are actually factories for the production of immune bodies, the result is the same; that they should be left alone. Clinical medicine fits in with theory in that acute follicular tonsillitis rarely occurs in small children.

There comes a time when instead of those tonsils resisting the invasion from without, the organisms have become settled in the bottom of the crypts and are themselves causing trouble. That is what we mean by the statement that the tonsils are "a source of sepsis." It is perfectly true that organisms may reside there and hæmatogenous invasions occur without local reaction, but in my opinion they very seldom do. Therefore, up to the age of 5, 6, 7, or 8 they should not be removed except on those rare occasions in which there is that history of recurring acute follicular tonsillitis.

What then is the best age of selection for that operation? I think the years between 12 and 15. By that time the lymphoid tissue of the tonsil has ceased to have any particular function. The child has developed its acquired immunity and the lymphoid tissue is not absolutely necessary to it as it was to the small child, and I find, personally, that the best results do come at about that age. I think the first two of these years are the better in those that leave school at 14, as once they have left school it is difficult for them to be able to get the time off from their work; but when the child remains at school until 15 or 16 the two latter are the years of selection. There are, however, a definite number of cases in which operation is indicated at the ages of 9, 10, and 11.

Conclusion

We may sum up thus. I do not believe that there is as yet any local treatment of the tonsils that can compare with operative surgery. There are two schools of operative surgery. It is no good trying to persuade the enthusiastic guillotinist that the dissection method is better. Contrariwise it is no good trying to persuade the dissection enthusiast to give up his method and take to the guillotine, no matter how perfect the operation may be. Size is no indication for removing tonsils to-day. The great indication is the history of recurring follicular tonsillitis, and this is even more important than any appearance of the tonsil. Children need lymphoid tissue in their respiratory tracts, and they do not get follicular tonsillitis in the earlier years of life. Therefore, operations on a child up to 5, 6, 7, and 8 should not be done unless it can possibly be helped and the need for it can be proved up to the hilt. After that age you come to the period where operative treatment on tonsils is a practical problem, but I think that the best results come after the age of 12 rather than before.

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[5] Tonsils and Adenoids in Children—A Plea for Fewer Operations, Transactions of the Medical Society of London, 1913–14, xxxvii., 244.

[6] Immunity in Health, London, 1919.

QUINQUENNIAL APPEAL FOR THE LONDON HOSPITAL.—Sir William Goschen, who succeeded the late Lord Knutsford as chairman, is making his first quinquennial appeal for the London Hospital. He points out that the cost of maintenance is £240,000 a year, but that the income always falls short, and that the hospital looks to the quinquennial appeal to establish an equilibrium. He computes that £200,000 of additional money will be required to maintain the institution for the next five years "and to keep abreast of the continuous developments of medicine and surgery." Last year there were 14,634 in-patients, while out-patients made 501,408 attendances.

THORACIC SURGERY

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compression is exerted by a foreign body there is the added danger from the irritation of this foreign body, which may ulcerate through into the lung substance, causing a pleuro-pulmonary fistula. There is also the increased risk of an immediate reaction of the pleural membranes until such time as they acquire tolerance.

With an artificial pneumothorax the irritation of the foreign body, air, is minimal, except occasionally at the induction. If it is done in a case free from adhesions, and in which collapse only is needed, complications, though they may occur, are minimal. They are far more likely to develop if the air is used to compress the lung, and if a stretching force is exerted on the adhesions when present.

The coexistence of a foreign body and of a compression force is particularly exemplified in treatment by oleothorax and extrapleural pneumolysis. The irritation from the foreign body may cause disturbance from the onset, whilst the combination of a foreign substance, and the compression exerted by it, is a source of anxiety which persists indefinitely. With thoracoplasty, on the other hand, the collapse, being produced by a readjustment of the surrounding walls, causes no anxiety once the immediate dangers of the operation are passed. The operation of phrenicectomy is a very minor one in comparison, but the same applies to this also.

ARTIFICIAL PNEUMOTHORAX

It is possible now to consider in greater detail the various methods available for collapse therapy. Except for the operation of phrenicectomy, which can at best effect a partial diminution only of the lung volume, artificial pneumothorax is the simplest of all the methods. It has, moreover, the great advantage that it does not need the surgical training and experience required by all the other procedures. In the absence of pleural adhesions the collapse obtained by artificial pneumothorax is the most complete obtainable by any method. The collapse is not permanent; as the gas is absorbed the lung re-expands. This has the disadvantage that refills are necessary, at first at short intervals but with the passage of months at longer intervals. Another disadvantage is that the constant variability in the degree of collapse allows a repeated partial reopening of cavities. There is, on the other hand, the great advantage that at any time, should it be necessary because of the extension of disease in the opposite lung in cases of pulmonary tuberculosis, partial or complete re-expansion of the lung is possible.

For cases of bronchiectasis involving the larger bronchial tubes, the complete collapse which is possible by artificial pneumothorax is more successful than the collapse obtained by thoracoplasty, unless extensive and multiple operations are done; but for bronchiectasis which involves the smaller bronchi and bronchioles, and for those long-standing cases of pulmonary tuberculosis which are unilateral and have extensive secondary mechanical changes, the permanence of the collapse by thoracoplasty is preferable. Greater initial risks are run, but after that the patient is free from the constant incubus of recurring treatment, the possibility of complications and of the lung re-expanding despite all efforts to maintain the collapse.

The amount of tuberculous disease, either active or healed, which can be present in the contralateral lung and yet permits of collapsing the one lung by artificial pneumothorax, is considerable in selected cases. Massive hilum infection is a contra-indication, but scattered foci or a localised partial lobar lesion is not. In these cases it is often not wise to attempt a complete collapse of the lung.

When the disease is localised to a lobe, advantage can be taken of the contracting force of the pathological fibrous tissue to maintain a localised or selective collapse of the affected lobe. This is particularly advantageous when a bilateral simultaneous collapse by artificial pneumothorax is indicated.

By artificial pneumothorax it is possible to do a complete collapse, a generalised partial collapse, either intentionally or because limited by adhesions, a localised or selective collapse, or a bilateral partial collapse; it is also possible to influence a lesion, such as a cavity which is responsible for hæmoptysis, by a contralateral collapse. In doing this, advantage is taken of the mobile mediastinum which enables the variations in intrapleural pressure on the one side to influence also the pressures on the opposite side.

OLEOTHORAX

The chief use of oils for the production of an oleothorax is in the treatment of effusions, especially tuberculous ones and those complicating artificial pneumothorax. The oil used in these cases is olive oil with 5 per cent. gomenol. Its value lies in its antiseptic property, both olive oil and gomenol being lethal to tubercle bacilli and to pyogenic organisms. The oil and gomenol are, however, foreign bodies and, the gomenol especially, are apt to produce big reactions unless exhibited with the greatest caution until the membranes have acquired tolerance. The tolerance or intolerance must be tested by a maximum preliminary dose of 5 c.cm. only. Subsequent injections depend on the response to the first dose. Olive oil-gomenol is gradually absorbed. This is advantageous as it enables fresh quantities of the oil and gomenol to be introduced. In the presence of pus the oil becomes saponified, and in this state mixes much more intimately with the effusion.

The preliminary step in the treatment of a tuberculous pyothorax is to aspirate the effusion, with air replacement if large, and to adjust the intrapleural pressures. Five cubic centimetres of olive oil-gomenol are then run in. If the reaction is slight 30 c.cm. can be introduced at the next aspiration, and as much as 100 c.cm. at the third. The object is not to fill the pleural cavity with olive oil-gomenol but, by repeated aspiration, if necessary, and replacing with 200 or 300 c.cm. of the oil, to sterilise the cavity and arrest the recurrence of the effusion and the toxic state produced by the absorption therefrom.

Oil and gomenol are also used in cases of artificial pneumothorax either to supplement the collapse by the weight of oil, in the attempt to arrest the progressive re-expansion of the lung, or to replace the air to avoid the frequency of refills. For this purpose some use olive oil with a smaller percentage of gomenol, others, myself included, prefer paraffin with 1 per cent. gomenol. This is very slowly absorbed, but at the start is much more irritating. The maximum dose is 2 c.cm., and the increments are double the preceding amount.

Whilst the use of olive oil-gomenol is a most valuable procedure in the treatment of effusions and, if correctly used, without danger, the use of paraffin-gomenol as an accessory to or a substitute for artificial pneumothorax carries very considerable risks. These risks can, however, be controlled in certain cases; in those wherein it cannot, the paraffin-gomenol must be abandoned. It is so rarely that paraffin-gomenol can be used with safety to increase the compression beyond that possible by air that the attempt is hardly ever justifiable. The substitution of an oleofor a pneumo-thorax is indicated only when there is great difficulty in arranging for the maintenance of refills with air. If the mediastinum is rigid and the oil will be enclosed within unyielding walls there is a considerable possibility that, sooner or later, ulceration will occur at some point on the surface of the lung, and that, a broncho-pleural fistula forming, the oil will escape. Even though the oil is at once withdrawn, infection will pass from the lung into the pleural cavity and an empyema result. This danger of perforation does not appear to exist when there is a mobile mediastinum, and the patients gain considerably from the constancy of the collapse maintained by the oil. Oleothorax is, in my opinion, contra-indicated as a possible means of arresting a progressive, adherent pleurisy.

THORACOPLASTY

Thoracoplasty is the alternative to pneumothorax when a generalised or an extensive localised collapse of the lung is required, and adhesions prevent the separation of the pleural membranes by air. Its use in tuberculous cases must be most strictly limited to those cases in which there is no active disease, and no extensive fibrotic change in the opposite lung.

The paravertebral, extrapleural thoracoplasty consists in the resection of the posterior ends of the ribs right back to the transverse processes of the vertebræ. The standard ten-rib thoracoplasty, which was done whatever the extent of the lesion, is now modified to suit the requirements of the individual case. If the lesion is confined to the upper lobe, an eight-rib operation will suffice; for apical lesions a six-rib or even a five- or four-rib thoracoplasty may produce the necessary collapse. This is a big advance as, with the lesser number of ribs which need resecting, there is a larger proportion of cases in which the operation can be done in one stage; there is also less shock and considerably less risk of pneumonic complications. The reduction in the number of ribs resected makes more feasible and safer yet another modification which is of great practical value. A much greater length of each rib can be removed in the case of large thin-wall or smaller thick-wall cavities. This produces better mobilisation, and therefore a more complete collapse of the affected part of the lung.

In my opinion the operation of thoracoplasty offers less risk to the patient than does the endeavour to convert a pneumothorax collapse, which is incomplete and inefficient owing to multiple adhesions, into a complete one by intrapleural pneumolysis, especially when the adhesions are broad and comparatively sessile.

The very successful results which are obtained by the local thoracoplastic operations makes this operation unquestionably superior to that of extrapleural pneumolysis, which necessitates the introduction of a foreign body and the production of a compression force instead of a collapse.

Most surgeons combine gas-and-oxygen with the local and regional anæsthesia. My own technique is to give nembutal, to do a complete local and regional anæsthetisation of the area, and then to keep the patient unconscious with chloroform vapour; rarely more than two drachms are needed. With this technique there is surprisingly little shock.

The deformity resulting from the operation is small, and, when the patient is dressed, is unnoticeable. The greatest sinking in is in the axilla and at the back. There is no dropping of the shoulder. The prevention of stoop and of obvious scoliosis rest entirely with the patient, and with care need not occur. There is no loss of movement of the arms, and the use of them is limited by the disease only.

The presence of contralateral activity is usually regarded as a definite contra-indication to thoracoplasty. In cases of serious hæmoptysis a localised area of active tuberculous disease in the opposite lung, which is non-progressive, is often a less danger to the patient than is the thoracoplastic operation to anticipate a fatal hæmorrhage. Lately, bilateral localised thoracoplastic operations for bilateral apical lesions have been done with success.

The mortality of the complete thoracoplasty is between 4 and 5 per cent. in selected cases. This is not high considering the seriousness of the alternative if the operation is not done. Of the four cases for which I did a one-stage 10-rib thoracoplasty in 1922 when I again started operating, all especially selected chronic but progressive fibrotic cases, three are still alive and working. The fourth died within a year from tuberculous enteritis.

PHRENICECTOMY

Phrenicectomy has come into vogue because of the simplicity of the operation and the great benefits which may be expected of it in many types of case. It is an expectation not always realised because there are so many factors which influence the result, and those cannot always be correctly gauged. In some cases it is possible to be almost certain of the result of the hemidiaphragmatic paralysis; in others there is considerable uncertainty of success. The operation is justifiable when there is the hope of benefit; should it fail, the worst factor is the disappointment experienced by the patient.

Prior to the researches of Felix on the anatomy of the phrenic and his discovery of the frequency and extent of the variations of the accessory phrenic nerve, the failures due to absence of paralysis of the muscle were so frequent that the gamble entailed was seldom worth the attempt. Our present more exact knowledge and the operations planned to overcome the difficulties ensures the paralysis of the hemidiaphragm in the great majority of cases.

The true phrenic nerve may run a somewhat abnormal course in its relation to the scalenus anticus muscle, but of greater importance are the accessory phrenic bundles. Whilst not always present, there is often one, sometimes two, and on occasion even more separate nerves which course down external to the true phrenic and join it usually shortly after crossing the subclavian vein. The true and accessory phrenics frequently form a loop round the vein, the one crossing in front and the other behind it. Occasionally they loop round the internal mammary vessels. The importance of this when applying traction on the phrenic nerve is obvious.

Destruction of the continuity of the phrenic and accessory phrenic nerves produces paralysis of the corresponding dome of the diaphragm and atrophy of the muscle. The muscle, losing its tone, becomes flaccid and is displaced upwards into the thorax, being pushed up by the intra-abdominal positive pressure and drawn up by the intrathoracic negative pressure. There is frequently a paradoxical movement of the dome. If there is considerable thickening of the pleura and dense basal adhesions, this will greatly limit the displacement.

The benefit derived from hemidiaphragmatic paralysis is twofold. There is the diminution in the hemithorax and corresponding reduction in the lung volume as a result of the rise of the muscle; there is also abolition of the drag on the base of the lung, pleural membranes, and pericardium, as a result of the paralysis. This latter is independent of the extent of the rise and is shown by the reduction or disappearance of such symptoms as pain, drag, dyspnœa, and tachycardia. The extent of the lung collapse is, however, directly dependent on the height to which the dome rises. This collapse is moreover not necessarily limited to the base, it may exert a marked influence on the apex of the lung, for which reason apical lesions and cavitation are among the indications for phrenicectomy.

Briefly stated, phrenicectomy, in order to paralyse the dome of the diaphragm, is indicated—

(1) In those cases for which artificial pneumothorax has been tried but found impracticable, except for those with large cavities or small but thick-wall ones, and those with considerable bronchial changes for which a more extensive collapse as by thoracoplasty is the alternative.
(2) In a few cases as an alternative to artificial pneumothorax, particularly in those in which there is a moderate-sized lesion only with fibrosis either at the base or the apex.
(3) For basal cases of bronchiectasis in the hope of preventing the necessity for a more extensive operation.
(4) In combination with artificial pneumothorax of the contralateral lung, especially when there is a recent basal lesion.
(5) In cases with hæmoptysis which cannot be controlled by pneumothorax and do not necessarily need, or cannot tolerate, a more extensive collapse.
(6) In association with artificial pneumothorax in order to supplement the basal collapse, or to reduce the size of the hemithorax when the lung is re-expanding according or contrary to plan. Occasionally also to help increase the interval between refills.
(7) For the treatment of certain symptoms such as cough due to irritation of the diaphragm and for the same reason of persistent uncontrollable hiccough. For pain and sensation of drag following on old pleurisy or a post-operative scar (as after basal hydatid or lung abscess). Also for tachycardia due to pericardial adhesions, dyspnœa due to pleural adhesions, and vomiting, when repeatedly associated with coughing.
(8) In association and as a preliminary to partial thoracoplastic operations to assist the lung collapse. But not in association with 10- and 11-rib thoracoplastics, because the resulting complete immobilisation of all the walls produces too pronounced a lymph and blood stasis.
(9) As a prophylactic against the development of bronchiectasis after an unresolved pneumonia, and in all cases with excessive basal fibrosis.

There are two ways of destroying the continuity of the phrenic nerve. The nerve can be evulsed, or a length can be cut away from the main nerve and from all accessory branches.

The object when doing a phrenic evulsion is to pluck the nerve out from its attachment to the diaphragm or to remove at least 11 cm. of its length. By so doing, all accessory branches are disrupted from the main trunk. It is only in the most exceptional case that an accessory nerve joins up with the main trunk at a point distal to 10 cm. from the point at which the nerve is found in the neck and cut. Evulsion has certain disadvantages, some of them grave. When the nerve is adherent, it is not infrequent for it to break at a point 7 or 8 cm. from the point of division. It is then not practical and highly dangerous to attempt to find the distal end. If the nerve and a stout accessory branch form a loop round the subclavian vein or the internal mammary vessels, there is the risk that these may be torn, as has happened, with fatal results. The nerve may be adherent to the mediastinal or visceral pleura, and, when ruthlessly evulsed, may tear the membrane and cause a spontaneous pneumothorax, or expose the mediastinal areolar tissue and lead to a serious or fatal mediastinal emphysema. The operation of evulsion, moreover, is always painful when the nerve is adherent.

The radical operation necessitates a slightly longer incision so that, after a length of the phrenic nerve has been cut away, the brachial plexus can be freely exposed, all accessory branches can be found, and lengths of these, and of the nerve to the subclavius, can be excised.

In either case the operation is done under local anæsthesia. The usual incision is a transverse one, but I prefer an oblique one about 2·5 cm. in length along the posterior border of the sternomastoid muscle, extending down to about 1 cm. above the clavicle.

SCALENECTOMY

After the dome of the diaphragm has been paralysed by phrenicectomy, some compensation for the loss of movement may result from an increase in the action of the intercostal muscles, and it is possible, therefore, that part of the advantage gained is thus later again lost. The action of the scalene muscles is antagonistic to that of the intercostal muscles; these muscles brace the first two ribs against the downward pull of the intercostals. After division of the scalene muscles there is a slight downward action of the upper ribs during inspiration, which is enhanced by division of the first rib. This is the raison d'être of the operation of scalenectomy.

The value of phrenicectomy in producing collapse of the apex of the lung, especially when there is localised fibrosis which assists in this selective collapse, is an accepted fact. An apical lesion, especially if there is a thin-wall cavity, is therefore an indication for hemidiaphragmatic paralysis. It is in this type of case when, particularly, it is felt that the rise of the dome alone will not be sufficient to effect the collapse required to obliterate the cavity that scalenectomy has been tried.

Considerable benefit has undoubtedly been obtained in many cases by the combination of these two methods of collapse, which are obtained by the one operation. The number of cases on which it has been tried is, however, few. In my own 11 cases I find it difficult to decide to what extent the improvement has been due to the phrenicectomy alone, or to the added collapse obtained by the division of the scalene muscles and first rib. My impression is that in some of these cases a part, at any rate, of the benefit must be attributed to the scalenectomy, but that its results are not in any way comparable to a four-rib apical thoracoplasty. In a recent paper L. Fisher reports 31 cases of which 18 had had a phrenicectomy done six months to three years previously without satisfactory result. He reports striking improvement after division of the scalene muscles.

Scalenectomy has the advantage of being an operation which can be done entirely under local anæsthesia, and which produces practically no shock.

Access to the muscles is obtained through an incision 5 cm. long, along the posterior border of the sternomastoid muscle, extending down to the clavicle. The scalenus anticus is first exposed, the phrenic nerve and any accessory branches are excised, the muscle is dissected free at its insertion into the first rib between the subclavian vessels, is detached from the rib, and then 2 cm. of its length are excised. The brachial plexus is drawn inwards, the greatest care being taken not to damage the long thoracic nerve which traverses the scalenus medius muscle. This muscle is traced to its insertion into the neck of the first rib from which it is detached, at first with the knife and then with the raspatory. A length of this muscle also is cut away. The neck of the first rib is now exposed at the bottom of the wound and is freed from its periosteum, bearing in mind the close relationship of the eighth cervical and first dorsal and first intercostal nerves.

EXTRAPLEURAL PNEUMOLYSIS

The importance of treating, the imperative necessity of obliterating, cavities is still unrealised to a grave extent. Every cavity, whether actively secreting or dry, is a menace to the patient. It is estimated that 90 per cent. of cases with cavities die within five years, Thin-wall cavities will sometimes heal with sanatorium treatment alone. When the walls are fibrosed some form of collapse is essential. The value of artificial pneumothorax and of multiple rib resections has already been discussed. For small apical cavities phrenicectomy alone, or supplemented by scalenectomy, may in some cases suffice. The operation of choice for apical cavities, in unilateral cases, is unquestionably, in my opinion, the localised apical thoracoplasty with extensive resection of the upper ribs, made possible by stripping the origin of the second and third digitations of the serratus magnus muscle off the second rib.

This, however, is not a practicable operation when there is active disease in the contralateral lung, nor when the patient is over 45 years of age. It is for these cases essentially that the operation of extrapleural pneumolysis must be considered. By this operation the lung is collapsed together with the parietal pleura; the space thus formed between the membrane and the ribs being filled with a foreign substance. That most frequently used is paraffin, but occasionally living grafts of the pectoralis muscle or of the breast are made use of. Whilst less irritating than paraffin, they do not maintain their volume. Paraffin may cause ulceration through the fused pleural membranes into the lung cavity at any time during the succeeding months or even years. Should this happen, the paraffin must be removed and the wound packed with gauze until the hole becomes filled with granulation tissue.

The insertion of the paraffin wax, which should have a melting point of about 50° C., is best done after resecting a short length of the second rib, supposing a collapse of the apex is required (apicolysis). The posterior layer of the periosteum is divided and then the parietal pleura and lung are stripped off the endothoracic fascia. Great care must be taken that the lung is not torn or the cavity opened.

A paraffin filling is also used as an alternative to a supplementary rib resection after a thoracoplasty, when a sufficient collapse has not been obtained by the original operation.

What Collapse Therapy Can Do

When used in conjunction with sanatorium régime for the treatment of pulmonary tuberculosis, collapse therapy will arrest the disease in a considerable number of cases doomed otherwise to a lingering illness, terminating in death.

The value of surgical treatment is long past the experimental stage. Collapse therapy will save life in many cases, restoring the individual to working capacity. For many it will enable healing to take place, and will shorten the period of treatment; for some it will make life possible among home surroundings, which would otherwise be denied because of the risk of infection; whilst for yet others it will protect or offer greater or a longer period of protection against recurrence. The more drastic forms of collapse therapy in the treatment of pulmonary tuberculosis take a certain toll from individuals who are permanent invalids, but give to the greater number life and a state of health otherwise unobtainable.

This country is still sadly behind America, Scandinavia, and other countries on the continent. Wales and some counties of England and Scotland give their tuberculous patients every modern aid in treatment. It is time that all follow this example, and offer to their patients those opportunities for the restoration of health and the saving of life which are available by collapse therapy.

AN ADVANCE IN THE SURGERY OF CLEFT PALATE *

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About 500 children are born each year in England with either a cleft palate or a hare-lip. In France, Peron [1] reviewed 100,000 births and found that one child in 942 was born with a similar deformity. Davis [2] in America found one malformation in every 915 births. These failures of embryonic fusion occur in connexion with the superior maxilla and may be classified, according to Brophy,[3] into:—

1. *Clefts of the soft palate only.*—The cleft may vary from a bifid uvula to a complete cleft extending through the whole substance of the soft palate. This type occurs in 20·8 per cent. of these malformations, according to Veau's [4] statistics.
2. *Clefts of the soft and hard palate,* which occur in 30·8 per cent. of patients.
3. *Complete unilateral cleft of the palate associated with a hare-lip;* the commonest type of malformation, which accounts for 38·8 per cent. of patients. The cleft of the palate involves the alveolar arch and extends through into the anterior nares. There are many variations of this type of deformity; they depend in the main on the degree of approximation of the cleft hard palate with its fellow of the opposite side.
4. *Complete bilateral cleft palate and double hare-lip;* the rarest type, present in only 9·6 per cent. of patients. Many variations of this type exist. It is essentially a deformity associated with maldevelopment and malposition of the premaxilla, and may or may not be associated with clefts of the hard palate itself.

The clinical manifestations of these conditions—the ugly face, the difficulty in eating, and the poor quality of the speech—are so well known and obvious that they do not warrant further description. In 1861 M. Langenbeck, a German surgeon, described his operation for closure of the gap in cleft palates. The essential steps of this method consist of:—

1. An incision is made in the muco-periosteum of the hard palate internal to the alveolar arches. Care must be taken not to injure the posterior palatine artery.
2. The muco-periosteum is stripped from the hard palate.
3. The internal borders are pared.
4. The buccal mucosa is sutured.

This operation, which has now become one of the classical procedures of surgery, has stood the test of over half a century, and is still the operation performed by many surgeons in England to-day, but it does not give universally satisfactory results. Many have been disappointed at the frequency with which the palate breaks down. Those who have followed their patients through childhood to adult life cannot have failed to be uneasy at the poor functional result, the nasal intonation of the voice, and the inability to pronounce many of the consonants.

Many attempts have been made to supplant Langenbeck's operation, and the names of Brophy and Arbuthnot Lane have already passed into history. Brophy advocated closing the cleft by forced apposition of the superior maxillæ, and substitutes a deformed alveolar arch for a deformed palate. Lane's flap operation was planned without due regard to the blood-supply of the flap and, if the child recovers from the initial severity of this procedure, the flap which forms its new palate nearly always sloughs away. Thus Langenbeck's operation has, until to-day, remained the operation of choice for cleft palate.

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* Post-graduate lecture delivered at the Infants Hospital.

VEAU'S OPERATION

Victor Veau has contributed a valuable step to the advance of cleft-palate surgery, and his operations have been performed at the Infants Hospital. In principle, they consist of suture of the nasal mucosa, suture of the muscles of the soft palate, and suture of the buccal mucosa. Referring to these three rows of sutures he states that "La première est utile, la deuxième est indispensable, le troisième est superflue." Veau epithelialises the raw surface of his flaps, and thus reduces cicatricial contraction to a minimum.

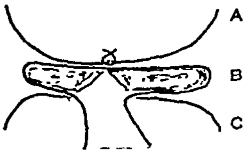

FIG. 1.—Section of a cleft soft palate.
A = nasal mucosa; B = palatal muscle; C = buccal mucosa; D = suture. (This and subsequent figures are after V. Veau.)

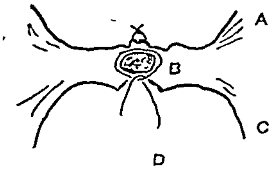

FIG 2.—As above, but suture tied.

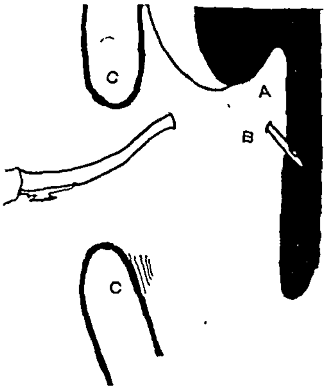

FIG. 3.—Cleft palate with Reverdin needle in place.
A = soft palate; B = Reverdin needle; C = alveolar arches.

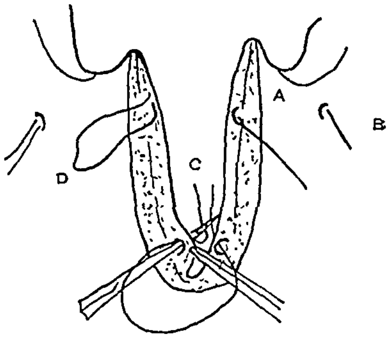

FIG. 5.—Cleft palate. Margins of cleft have been split. Muscle suture placed in right-hand side.
A = soft palate; B = muscle suture in place on right; C = nasal mucosal suture; D = silk loop.

It is our practice at the Infants Hospital, and I think it is an almost universal one, to repair the hare-lip soon after the infant has recovered from the shock of its birth and has become acclimatised to its new surroundings. The practice with regard to the repair of cleft palates varies widely, but the tendency has been to suture these clefts early in the infant's life. Langenbeck's operation was performed when the child reached the age of 2 or 3 years. Now palates are repaired when the infant is ten months to a year old, before it has been taught to speak.

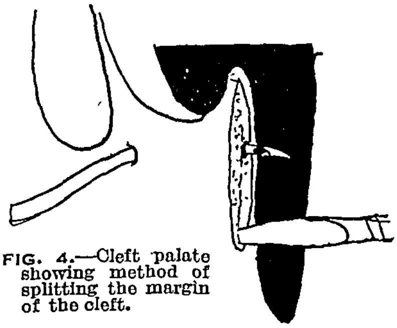

FIG. 4.—Cleft palate showing method of splitting the margin of the cleft.

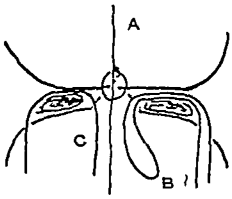

FIG. 6.—Soft palate.
A = Nasal mucosal stitch; B = silk loop; C = catgut muscle suture stage.

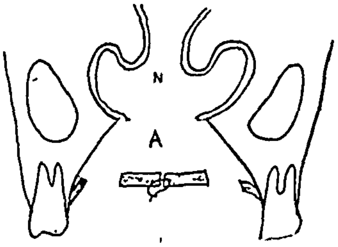

FIG. 7.—Langenbeck's operation. Note dead space A.
N = nose. A = dead space.

Veau does not consider it necessary to remove either the tonsils or the adenoids, as he thinks that both these structures fulfil a useful purpose in helping to close the post-nasal space, but if they show signs of infection, as exemplified by enlarged glands at the angle of the jaw or muco-pus in the post-nasal space, then the tonsils should be dissected out and the adenoids curetted. It is our practice here to remove the tonsils in all cases, at least two months before the contemplated attack on the palate. This interval enables the structures operated upon to return to their pristine suppleness. All signs of inflammation in the bed of the tonsil should by then have disappeared. A clean mouth is a very material asset to the suture line in the palate. Any carious teeth must be removed. Nursing plays an important part in the success or failure of the operation. Often the mother makes a most successful nurse, but this depends entirely upon her temperament. In all circumstances the child must be familiar with its surroundings and attendants, and thus must be admitted to the hospital several days before the operation. Operation should if possible be planned to take place in the spring or summer.

Veau has devised four main types of operation, one type for each subdivision into which cleft palates have been classified. Two of these operations will be described in detail.

OPERATION FOR CLEFT SOFT PALATE

The child is given an injection of antiscarlatiniform serum (Dick) and is allowed barley-sugar and glucose before operation; it is neither starved nor purged. Anæsthesia is induced with ethyl chloride, and this is followed by ether. The child is put in the dorsal position with a sandbag under its shoulders and its head extended. Care must be taken not to hyper-extend the head, as this may interfere with respiration. The mouth is kept open by means of a Waugh's gag, and the anæsthetic—oxygen blown through ether—is delivered through a tube placed in one nostril.

The surgeon sits at the head of the table. The aim of the operation is to suture the soft palate in three layers. The first layer is composed of the nasal mucous membrane (Fig. 1); the second is a muscular tension suture (Fig. 2); and the third closes the buccal mucosa.

A curved Reverdin's needle is entered on the buccal surface of the soft palate near the little depression made

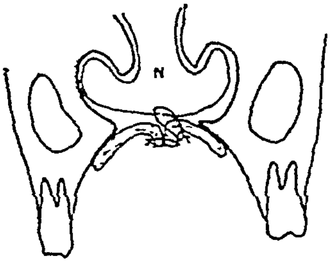

FIG. 8.—Veau's operation. Note epithelialisation of superior aspect of flap and obliteration of dead space.
N = nose.

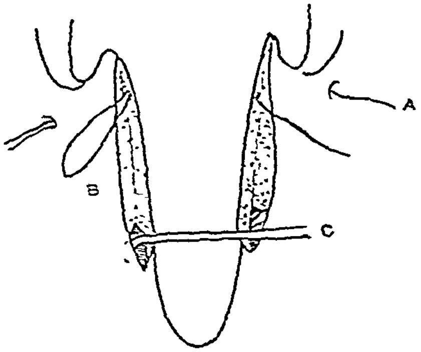

FIG. 9.—A = right half of muscle suture in place; B = silk loop; C = separation of palatal aponeurosis from bone with crochet.

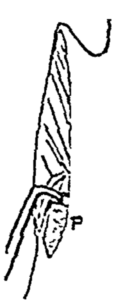

FIG. 10.—Method of separating muscle from posterior surface of hard palate.
P = hard palate.

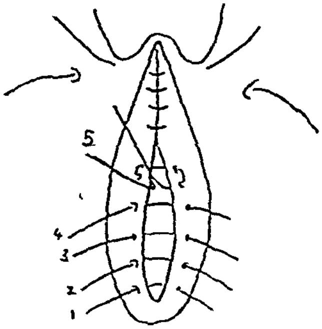

FIG. 11.—Nasal mucosa sutured. Fifth knot to be tied on nasal surface of palate.

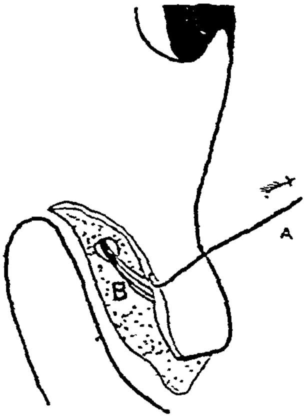

FIG. 12.—Arterial pedicle, B. Hook, A. The pedicle is stretched by pulling the hook inwards and downwards.

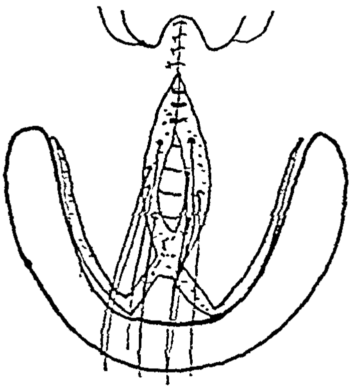

FIG. 13.—Soft palate sutured. Sutures in nasal mucosa before insertion through the palatal flaps.

by the upper end of the anterior pillar of the fauces and the side of the inferior maxilla (Fig. 3). The needle is pushed deep to the muscles of the palate, between them and the nasal mucosa. The index-finger is placed on the nasal aspect of the soft palate to guide the needle point. The point of the needle is brought out on the buccal surface of the palate 1 mm. from its internal free edge. The surgeon must make sure the needle envelops the muscles by palpating its concavity with the index finger which was placed on the posterior surface of the soft palate; if the muscles are superficial to the needle they are readily felt. It may be necessary to make three or four attempts before the needle has been correctly placed. This manœuvre is easier in large muscular palates than in the palates of young infants. The needle must be passed when the soft palate is flaccid. The right suture is easier to pass than the left. Before passing the catgut the edge of the soft palate should be incised. The incision is not a paring operation (Fig. 4). The edges are not cut away and the mucosa is not resected. After the incision has been made the edges of the wound open out and all tissues are thereby conserved. It is my practice to detach the muscular elements of the soft palate from the posterior end of the bone of the hard palate with the crochet. Unless this is done there is an undue amount of tension at the anterior extremity of the wound.

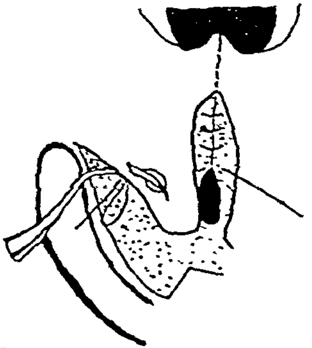

FIG. 14.—Showing method of passing the suture to hold palatal flap to nasal mucosa.

Incision of the uvula is difficult. It is made first while the palate is steadied by the needle, and is then carried up towards the cleft. If the cleft is short the knife may be carried to its summit. If the cleft is a long one it is not wise to incise the edges with the needle in place, as the tissues are fixed by the bone as well. The incision should be confined to the buccal mucosa and a few fibres of the muscle. A piece of wire† without kinks or twists in it is now placed in the eye of the Reverdin needle and drawn into position. Similar measures are carried out on the left side. The only point of difference between the two sides is the manner in which the catgut is passed. On the left side a silk loop is left in place (Fig. 5). The summit of the cleft is now split. In clefts of the soft palate the edges tend to come together in front. The crochet is used to pull the buccal edge out and the incision is completed with the knife.

Suture of the nasal mucosa is an important step in the operation. Ophthalmic silkworm gut is used, and the stitches are passed with a Reverdin needle. The silk must be tied on the nasal side of the *soft palate*. and with this object in view the Reverdin needle is passed threaded. The needle pierces the cut edge of the mucosa at 1 mm. *from* its free border, and the silk is caught and pulled from the eye of the needle on the nasal side of the palate with a pair of forceps. The knots are tied as shown in the diagram (Fig. 6). It is important when tying the knot to avoid lifting the soft palate by pulling the ends of the silk upwards. In small mouths one thread may be fixed over a finger in the nasopharynx while the other is tightened by a hand outside the mouth. These nasal mucosal sutures are carried back to the base of the uvula. The uvula is difficult to suture. A suture should be placed through its tip. This

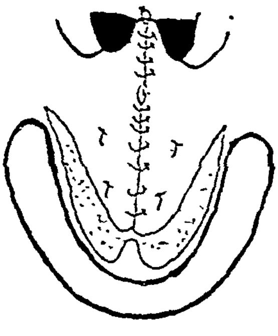

FIG. 15.—The completed palate.

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† We use No. 00 catgut instead of wire.

suture is not tied but is used as a retractor, and the remaining sutures are inserted *in the posterior or nasal surface* of the cleft. Sutures should now be placed along the anterior aspect of the uvula. These sutures should be placed by a needle which takes both edges of the cleft at one thrust.

The *muscular suture* is the most important step in the operation. It surrounds the muscles of the soft palate (Figs. 1 and 2). Many of these muscles lie in the pharynx—e.g., the tensor palati and levator palati muscles—and only their tendons are inserted into the soft palate. Hence a suture of this muscular element in the soft palate does not strangle the muscles but draws some of their tendinous fibres tightly together. It is essential to make quite certain that all the muscles and tendons in the soft palate are encircled by the suture, and the suture does not include either buccal or nasal mucosa (Fig. 1).

One end of the suture is placed in the silk loop, which has already been passed through the left side of the soft palate. Care is taken to make quite certain that the catgut is free, and it is then drawn through the left half of the palate.

The ends of the catgut should now be passed between the buccal mucosa and the muscle, so that the suture may be knotted in the midline to include only the musculature of the palate. This is done by passing the needle through the orifice from which the catgut is projecting and passing it inwards immediately below the buccal mucosa. The needle is withdrawn with a silk loop in it. The catgut is placed in the silk loop and is thus made to encircle the muscles. The same manœuvre is carried out on the opposite side of the palate, and the ends of the catgut are tied as for the first stage of a reef knot. The knot is pulled tightly and tied.

Buccal suture.—When the catgut suture has been tightened the buccal mucosa suture is inserted. Nothing, however, is asked of this suture.

OPERATION FOR CLEFTS OF THE HARD AND SOFT PALATES

The constituents of the soft palate are elastic, those of the hard palate are not. The great drawbacks to Langenbeck's operation are the large dead space A (Fig. 7) which is left, and the manner in which the palatal flaps are left with large exposed raw areas which heal with much cicatrisation.

Veau's operation is not a copy of Langenbeck's operation, for Veau overcomes these two fundamental objections. *He obliterates the dead space and he covers the raw area in his palatal flaps with nasal mucosa* (Fig. 8). The closure of the soft palate is a suture operation, that of the hard palate is an autoplastic flap operation. These flaps are lined on each side by mucosa, and come together easily in front, but there is a little tension posteriorly.

A technique similar to that previously described is used.

The operator commences by attacking the soft palate. The incisions of the edges of the cleft are carried up to the cleft in the hard palate. As the bone is approached and passed, this procedure becomes progressively more difficult. It is important not to split the mucosa, which is bound down to the underlying bone, so that when an incision is made in it the wound does not gape as the incision in the soft palate does; also the field is obscured by hæmorrhage.

For these reasons *it is better to separate the mucosa* of the hard palate with the crochet rugine before incising it. The crochet is introduced into the wound at the posterior end of the hard palate and is kept in close apposition to the bone (Fig. 9). The detachment of the mucosa is facilitated by the presence of a few muscle-fibres in the submucosa round the edge of the cleft hard palate (Fig. 10). This muscle of the cleft has been described and emphasised by Veau. As each 5 mm. or so of mucosa is raised by the crochet it is incised with the knife. The mucosa is detached from both nasal and buccal surfaces of the palate.

The nasal mucosa becomes more adherent anteriorly and is liable to get pricked by the crochet. Therefore the crochet must always be kept close to the superior aspect of the palate. The mucosa is stripped by movements of the crochet as a whole and not by the irregular motion of its point alone.

The left edge of the cleft should be incised first and then the right. It is essential for the operator to be ambidextrous. The right hand is used to incise one side and the left hand for the other. The mucosa becomes more adherent to the bone anteriorly, and difficulty may be experienced in making the incision meet round the front edge of the cleft.

Nasal suture.—When the edges of the cleft have been incised and the nasal mucosa has been elevated, the cut edge of the mucosa will be found to overlap the edges of the cleft in the bone by 2 to 3 mm. The sutures of the nasal mucosa of the hard palate are placed so that the knots are tied in the buccal surface, for these sutures act as points to which the palatal flaps are fixed. As a routine four stitches are employed, and are passed with a small curved needle on a holder. The sutures are not tied and the ends are left long (Figs. 11 and 13). The catgut suture in the soft palate is then completed and tied, and a fifth suture, placed in the nasal mucosa at the junction of the hard and soft palate, is tied so that the knot lies on the nasal surface of the palate (Fig. 11).

The operation has been relatively bloodless, but when the palatal flaps are raised hæmorrhage is sharp; it may be controlled by compression of the flap against the bony resistance of the palate. It is useless to attempt to ligate bleeding points. An incision is made round the alveolar margin very near the teeth, starting just posterior to the alveolar process of the superior maxilla and carried forwards external to the posterior palatine foramen. The flap thus delineated is raised from before backwards, care being taken *to avoid injury to the vascular pedicle coming from the* posterior palatine foramen. Hæmorrhage is severe but should be ignored. The crochet should be passed just external to the vascular pedicle and this pedicle should be elongated by gentle traction (Fig. 12). The pull should be steady and progressive. When this has been done the flap is compressed by means of the ball of the thumb against the hard palate. This pressure should be maintained for half a minute at least, to ensure hæmostasis. The procedure is repeated on the opposite side (Fig. 13).

The flaps are now placed in position by means of the four untied sutures which have been passed through the nasal mucosa. The most posterior of these four nasal sutures is isolated and the ends are passed through the buccal flap of one side behind the arterial pedicle (Fig. 14). The next succeeding suture is fixed in a like manner through the opposite buccal flap. The next suture is passed much more anteriorly through the buccal flap originally treated. Thus each buccal flap has two sutures—an anterior and a posterior—which tie it to the nasal mucosa. All four sutures are placed in position before any are tied. All that now remains is to suture the palatal flaps in the midline. Anteriorly this is very easy; posteriorly there is a little tension, the amount varying with the efficiency with which *the arterial pedicles have been elongated.* If a small gap persists it is of no very great moment (Fig. 15).

COMPLETED PALATE

Careful after-treatment should be instituted. The child should be kept quiet with a little tincture of opium for the first 24 hours, and glucose and sodium bicarbonate may be given per rectum. Slops and soft foods should be allowed, and after each feed some sterile water should be given. The palate is not inspected until the eighth or tenth day. Small holes in the new suture line should not occasion undue alarm, for they tend to close spontaneously. I have so far been unable to judge the functional result of this procedure as all the infants operated upon have been too young to talk.

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WORK OF EYE HOSPITALS.—A number of eye hospitals have recently held their annual meetings. Of the Glasgow Eye Infirmary it was reported that the out-patient department is "tremendously overcrowded," but that an appeal for £25,000 for extensions had produced only £7000, with which it is proposed to do work imperatively necessary.—Last year the Birmingham and Midland Eye Hospital prescribed nearly 10,000 pairs of spectacles. There is "considerable physical and monetary strain," and great need for a scholarship or fund for research to enable younger surgeons "to study at home or abroad, or to investigate some special question in ophthalmology in the laboratory or clinic."—Bristol Eye Dispensary (which is said to be the only institution of the kind open on Sunday) last year treated 1775 new patients.—At Southampton Free Eye Hospital in 1932 there were 377 in-patients and over 9000 out-patients. More than half the cost of running the institution is paid by the patients. The medical staff is asking the committee to consider the desirability of establishing a clinic for the ocular training of children who squint.

A CASE OF DYSINSULINISM

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APART from those described by Ramsbottom and Eastwood, and by Moore and O'Farrell, no cases of spontaneous hypoglycæmia appear to have been reported in this country. The total number recorded in America and elsewhere is still small, but the condition is probably frequently overlooked and the symptoms are likely to be regarded as the product of the patient's imagination. We are indebted to Dr. J. J. Spira for the opportunity of studying the following case in which he had diagnosed the hypoglycæmia syndrome.

CASE RECORD

The patient is a married woman, 44 years of age. Her mother suffered from hypertension and died from a stroke at 47. There is no family history of glycosuria or diabetes.

The patient has had three healthy children and six early miscarriages, the miscarriages alternating with the normal pregnancies.

Her medical history has been eventful. At 25 she was curetted for dysmenorrhœa; but the periods are still irregular and usually accompanied by attacks of sickness, epigastric and lumbar pain, and abdominal distension.

At 30 she was operated on for epigastric hernia. At 38 she had an attack of typhoid. In 1930 her tonsils were enucleated. For six years she has suffered from frequent and painful micturition, and in 1931 had a definite attack of pyelitis for which she was treated with ureteric catheterisation and pelvic lavage. Later in the same year an ischiorectal abscess developed and was incised. Since the age of 30 she has suffered from mucous colitis and has passed mucous casts. This condition has been somewhat improved by colonic lavage.

In 1926, shortly after her attack of typhoid, an abnormality of her sugar metabolism was first noticed. A Swiss physician whom she had consulted found a reducing body in the urine. She was treated by him for "glandular anæmia" with thyroid and parathyroid, and was given a course of insulin, 10 units on alternate days. During this treatment she experienced several insulin reactions.

The maximum weight which she has ever attained was 10 st., at the age of 19. Since her miscarriages she has lost weight steadily, and in 1928 she was only 6 st. 3 lb. At the time of writing her weight is 7 st. 9 lb., and her height 5 ft. 5 in.

The attacks of which she now complains can be traced back for at least four years and probably longer. At first intermittent, they have become steadily more frequent and more severe. Noticeably severe reactions occurred at the time of the ischiorectal abscess (1931). She is now getting a slight reaction almost every day. They usually occur at about 12 noon but occasionally before tea, at 10 P.M., and in the early hours of the morning. They are aggravated by exercise and are relieved by rest in bed. She describes them as resembling the results of an overdose of insulin. At the onset of the reaction there is a feeling of intense depression. This is succeeded by an attack of giddiness, breathlessness, and a sense of impending dissolution. The memory and intelligence are temporarily impaired. There is marked tremor of the hands, pallor, tachycardia, and sweating. She becomes ravenously hungry. The reaction clears up in ten minutes after taking glucose in solution, rather more slowly if it is ingested in solid form.

Sugar was found in the urine in January, 1932. In May, 1932, a high blood-sugar was found on two occasions by two different consultants, and she was put on insulin. In June, 1932, a blood-sugar of 0·038 per cent. was noted by a third consultant, with a "lag curve" after glucose ingestion, and frequent doses of sugar were advised. Recently she has been taking up to 44 units of insulin, in two doses, daily, with a good deal of sugar at the time when reactions are expected to occur. On this she has gained 12 lb. in weight.

She was first seen by us in September, 1932. At that time the blood-sugar three hours after a normal breakfast was 0·077, and an hour later had fallen to 0·054, signs of a reaction developing. She had had no insulin for 24 hours. Sugar, which was ravenously consumed, rapidly relieved her symptoms.

On Oct. 12th, 1932, she was admitted to a small ward for observation, having taken no insulin for 48 hours. Physical examination was negative except for slight epigastric tenderness. Blood pressure 120/82. She presented no clinical signs of endocrine dysfunction. She was put on a diet of 2000 calories, containing 200 g. carbohydrate, divided equally over the four meals. The blood-sugar on Oct. 13th ran the following course. Breakfast: 50 g. carbohydrate at 8 A.M. Blood-sugar 10 A.M., 0·048; 11 A.M., 0·048; 12 noon, 0·058; 1 P.M., 0·077. Lunch: 50 g. carbohydrate; 2 P.M., 0·113; 3 P.M., 0·122; 4 P.M., 0·092; 5 P.M., 0·072. Tea: 50 g. carbohydrate; 6 P.M., 0·139. The urine, passed hourly, showed traces of glucose (glucosazone) throughout the test, but no acetone.

The results of two glucose-tolerance tests are given in the accompanying Table. Test I. was followed by a severe attack of hypoglycæmia.

	TEST I (20/10/32)				TEST II (15/10/32)			
	B.S. per cent.	Urine.		R.Q.	B.S. per cent.	Urine.		R.Q.
		Amount	Sugar per cent.			Amount	Sugar per cent.	
Fasting		—	—	0·81	—	—	—	—
,,	0·065	45 c.cm.	Trace.	0·77	0·062	60 c.cm.	Nil.	0·83
	Glucose 50 g.				Glucose 50 g.			
30′	0·154	—	—	0·84	0·139	—	—	0·86
60′	0·227	—	—	0·89	0·345	45 c.cm.	0·8	0·86
90′	0·201	65 c.cm.	2·05	0·94	0·152	—	—	0·91
120′	0·141	—	—	0·96	0·171	50 c.cm.	2·5	0·89
170′	0·109	28 c.cm.	2·20	0·92	0·122	30 c.cm.	1·5	0·88
210′	0·056	10 c.cm.	Trace.	0·84	—	—	—	—

With a view to determining the extent of peripheral sugar storage, the capillary-venous sugar difference was estimated while the patient was hypoglycæmic: Blood-sugar, capillary (finger-prick), 2½ hours after breakfast at 10.30 A.M., 0·085; at 11 A.M., capillary 0·054, venous 0·040. Considerable peripheral storage was therefore going on at hypoglycæmic levels of blood-sugar.

As the patient had been taking large doses of insulin without any apparent aggravation of her symptoms, the effect of 30 units of insulin on the blood-sugar was examined. The patient was on the same diet under the same conditions as on Oct. 13th. The insulin was injected immediately before her breakfast which contained 50 g. carbohydrate, and was taken at 8 A.M. Blood-sugar: 10.30 A.M., 0·079; 11 A.M., 0·048; 11.30 A.M., 0·054; 12 noon, 0·077; 12.30 P.M., 0·067, 1 P.M., 0·041. Hypoglycæmic symptoms were noticed between 11.30 A.M. and 12 noon, but passed off without administration of sugar. Exogenous insulin did not appear to depress her usual blood-sugar level to any appreciable extent. After injection of 0·5 c.cm. 1 : 1000 adrenaline, the blood-sugar rose in the course of two hours from 0·067 to 0·100, which we regard as a normal response.

The results of the lævulose-tolerance test gave no indication of any grave impairment of liver function. Blood-sugar before: 0·081; 30 min., 0·125; 60 min., 0·095; 90 min., 0·095; 120 min., 0·087; 150 min., 0·077. The basal metabolic rate determined on three occasions gave rates of —26 per cent., —22 per cent., —18 per cent.; but apart from this no signs of thyroid inadequacy were present.

Radiographic examination showed a sella turcica of normal size and appearance, and a normal gastric outline and emptying time. The fæces on a mixed diet contained 20·8 per cent. of fats, and showed a good digestion of muscle-fibres and no excess of starch microscopically. The urinary diastatic index was 10·0. There was therefore no evidence of impairment of the external secretion of the pancreas. A further blood-sugar curve after 50 g. glucose was obtained on Feb. 3rd, 1933, and the results were as follows: blood-sugar: 11 A.M., 0·068; 11.30 A.M., 0·167; 12 noon, 0·151; 12·30 P.M., 0·130; 1 P.M., 0·070; 1.30 P.M., 0·037. From this it appears that, in comparison with the previous curves, the rise of blood-sugar is less marked; the terminal hypoglycæmia is, however, accentuated.

DISCUSSION

Hypoglycæmic attacks not due to injection of exogenous insulin have been reported in patients suffering from gross lesions of the liver, lesions of the adrenals, adenomata or adenocarcinomata of the islands of Langerhans, and the "pluriglandular syndrome." There was no evidence in our case of a gross liver damage. A tumour large enough to destroy almost the entire liver parenchyma can hardly have been present for the length of time during which the attacks had occurred, and should have been easily detected on clinical examination. It is common knowledge that in conditions of hepatic disorder, such as cirrhosis, no hypoglycæmic symptoms usually occur. The few cases of hepatic hypoglycæmia which have been described have been associated with almost entire destruction of the liver by growth: of this there can be no question in this patient in view of the four years' history of symptoms. On the other hand, with insular adenomata or adenocarcinomata, gross irregularities of blood-sugar, both in the upward and downward direction, have been observed. The case reported by Wilder and his co-workers is one of the earliest on record. This patient gave high blood-sugar curves with a terminal hypoglycæmia practically identical with those obtained in our case. There was no evidence of hepatic disorder. Laparotomy and a subsequent post-mortem examination revealed that the metabolic disturbance was associated with an adenocarcinoma of the pancreas, with small secondary nodules in the liver. The tumour tissue, which contained insulin, had apparently arisen from the islets of Langerhans. Abundant glycogen was present in the liver. Adrenal hypoglycæmia due to destructive lesions of the adrenal medulla, as in the case reported by Rabinovitch, is a rarity, and the disease is of short duration. In our patient the absence of Addisonian pigmentation, the normal blood pressure, and the length of history, appear to negative this possibility.

The syndrome met with in our patient most closely resembles that associated with definite adenomata or adenocarcinomata of the insular tissue or diffuse hyperplasia of the islands of Langerhans. The most curious feature of the condition is the tendency to extremely low blood-sugar levels on a normal starch-containing diet, coupled with a blood-sugar response to glucose, ingested in solution, resembling that of the diabetic. In view, however, of the rise in the respiratory quotient which follows the ingestion of glucose there can be no question of inadequate oxidation of glucose, as in the diabetic. The absence of ketosis is further evidence of the satisfactory oxidation of sugar. The marked terminal hypoglycæmia also differentiates these curves from those of the diabetic.

Similar findings have been reported by other observers. Glucose-tolerance tests were performed in 12 of 20 pancreatic cases collected by Gammon and Tenery; in 8 instances high curves were obtained. In a quarter of the recorded cases glycosuria had been noted.

No explanation of this anomalous response to glucose can be given. We have as yet no definite knowledge as to the mechanism by which the output of insulin from the pancreas is controlled. For the present, in view of the association of high blood-sugar curves after glucose ingestion with hypoglycæmic levels of blood-sugar on a normal diet, the condition is perhaps better termed dysinsulinism than hyperinsulinism. The findings suggest a failure to adjust the insulin output to the needs of the body rather than a constant excessive output.

Other unexplained features of the case are the tolerance of exogenous insulin and the low basal metabolic rate. In the latter respect our case resembles that reported by Pettersson, in which atrophy of the thyroid and adrenals was found post mortem in association with an increase in the number of the islands of Langerhans.

Differentiation between diffuse hypertrophy of the insulin-producing tissue and localised adenomata or adenocarcinomata of the islands of Langerhans is with our present knowledge impossible. The indications for operative interference are therefore uncertain. In default of surgical treatment two possible lines of treatment present themselves. We may attempt to avoid stimulation of the insulin-producing tissue by placing the patient on a diet poor in carbohydrate; or we may aim at keeping the blood-sugar at a normal level by frequent carbohydrate feeds. Successful results have been reported from both methods.

Good bibliographies of the condition are to be found in the papers by Harris, and by Gammon and Tenery.

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COMMENT ON THE ABOVE CASE

By Dr. P. J. Cammidge and Dr. E. P. Poulton

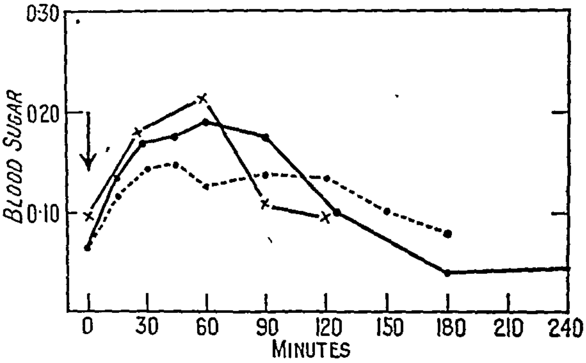
Dr. Griffiths and Prof. de Wesselow have kindly shown us their notes so that we can comment on this case, with which we were also concerned. Dr. G. L. Eastes has kindly allowed us to publish the first sugar-tolerance curve carried out on the patient on Feb. 5th, 1932. This one and the curve obtained by E. P. P. on June 29th, 1932 (Hagedorn-Jensen method) resembled in a general way de Wesselow's curves (MacLean's method) obtained in the latter part of October, 1932, except for the very high value of 0·345 per cent. obtained on one occasion by Griffiths and de Wesselow. But the curve obtained by P. J. C. on Dec. 7th, 1932, for the carbohydrate of the blood after hydrolysis was much lower, since the maximum value was 0·147 per cent. at three-quarters of an hour, and the curve for the "true" sugar was, of course, lower still. This suggests that the condition had varied in the course of the year. This was also borne out by the epinephrine test; on July 20th, 1932. E. P. P. found that the blood-sugar was 0·04 per cent. at 12.15 P.M. 1 c.cm. of 1 in 1000 epinephrine was injected, and the results obtained were at 20 min., 0·05 per cent.; 52 min., 0·04 per cent.; 75 min., 0·05 per cent.; 95 min., 0·05 per cent.; a negative result. Griffiths and de Wesselow, on the other hand, at a later date obtained a positive result with half the quantity of epinephrine.

At the moment the tendency in medicine is to diagnose any case of spontaneous hypoglycæmia with corresponding symptoms as due to hyperinsulinism caused by a tumour, hyperplasia, or merely increase of function of the islands of Langerhans. A study of the published cases tends, in our opinion, to throw doubt on this conclusion.

PANCREATIC ADENOMA OR HEPATIC DEFICIENCY?

The first case of adenoma of the islands of Langerhans was described by Nichols[1] in 1902, and Schneider[2] has collected 13 cases dealing with the literature up to 1922. This paper has evidently escaped the notice of many recent writers on this subject. Where clinical notes are available for these cases there does not appear to be any history of the hypoglycæmic symptoms recently described. Of course, it is possible that the symptoms were present, but not noted. This may sometimes have been the case, but it is difficult to believe that these symptoms were present in all the cases. For instance, Morse's cases were acute peritonitis and cerebral hæmorrhage. Rollett's case died of tuberculosis of the lungs and peritoneum, and the tumour in the pancreas was a chance finding post mortem. In Lecomte's case there was a tumour of the cerebellum with definite symptoms of cerebellar disease. Priesel's case was one of lobar pneumonia. We would suggest that these adenomas can occur without producing hypoglycæmic symptoms.

There have been described at least eight cases of the hypoglycæmic syndrome associated with adenoma and three cases with carcinoma. In McClenahan's and Morris's case,[3] the only case where the data are available, we have calculated that the size of the adenoma was 2·2 per cent. of the whole pancreas, a very small body to be solely responsible for such marked symptoms. Again in the cases described by Wilder and others[4] and Howland and others,[5] in spite of the hypoglycæmia the sugar-tolerance test gave a diabetic type of curve, a fact which requires some explanation. The suggestion put forward by Wilder that the liver was so full of glycogen that it could not store any more sugar so that the blood-sugar rose is partially supported by the work of Boller and Überrack,[6] who found that the blood-sugar did rise abnormally high when dextrose was given at the end of a period of insulin administration; but there was no hypoglycæmia at the beginning or end of the tests as occurred in the cases under review, and when the dextrose was given at the time of hypoglycæmia there was no very marked extra rise in the blood-sugar. Then, if hyperinsulinism leads to hyperglycæmia after sugar, why in all the other cases of spontaneous hypoglycæmia should the sugar-tolerance curve have been normal? A still greater difficulty is the response to epinephrine or pituitrin. In three out of eight cases the blood-sugar did not rise in response to injections of these substances; but a rise would be expected if the liver was full of glycogen which was demonstrated by Wilder to be so in his case. His suggestion that there was so much insulin in the blood that the effect of the epinephrine was swamped is not convincing, because where a low sugar results from a balance between an excess of insulin and any epinephrine secreted secondarily (? by reflex action) a dose of epinephrine should have its usual action and raise the blood-sugar.



×——× R. Easte's curve, 5/2/32.
•——• E. P. P.'s curve, 29/6/32.
•-----• P. J. C.'s curve, 7/12/32 (total carbohydrates estimated).

The fact is all these biochemical changes are found in rabbits when the liver has been poisoned by phosphorus[7]; the blood-sugar is low because its supply from the liver is interfered with; there is a bigger rise than usual after a dose of dextrose combined with insulin, and the blood-sugar level is not affected by epinephrine, because the glycogenic function of the liver is interfered with. Cammidge and Howard[8] also found that by poisoning the liver with hydrazine phosphate the disturbance of glycogenic function was indicated by an increase in the dextrins which were liberated into the circulation. If hypoglycæmia in man is usually due to impairment of glycogenic function it is quite likely that the latter might be followed secondarily by some increased activity of the islands of Langerhans, which might take the form of an adenoma or even a carcinoma of the pancreas. Such increased activity would have the advantage of keeping up the load of glycogen in the liver cells, though it would also deplete the peripheral circulation of sugar, and in this respect aggravate the effect of the primary hepatic disease.[*] On this view operation would also be expected to bring relief, and in this connexion it is of particular interest that our patient obtained most relief by large doses of insulin and glucose; this may have helped the liver because the islands had not yet hypertrophied sufficiently—the patient never actually fainted, a symptom usually present in the pancreatic cases.

In favour of the hepatic deficiency point of view is the fact that in Wilder's case and in Finney's case[9] (where a normal pancreas was partly removed) there was a long-standing history of alimentary symptoms which might well affect the liver, and there is a similar history in the present case; and Cammidge [10] and Gammon and Tenery [16] have commented on the frequency of this kind of history in hypoglycæmia.

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[*] That this sequence of events in pathology is not fanciful is shown by congenital heart disease which is benefited by the polycythæmia: the latter, however, sometimes increases the viscosity of the blood so much that other undesirable effects are produced.

Such a view makes it necessary to postulate a dissociation of hepatic function—an interference with glycogenic function without disturbances of biliary, urea forming, and uric acid destroying functions, &c. Experimentally this dissociation takes place when most of the liver is removed from a dog.[11] In Nadler and Wolfer's [12] case of carcinoma involving most of the liver the sugar-tolerance curve was very similar to the earlier curves in the present case, and epinephrine did not cause a rise of blood-sugar. Clinically, the patient had typical hypoglycæmic attacks which were hardly controlled with 270 g. of dextrose a day; there was no jaundice or other sign of hepatic deficiency. In Crawford's [13] case of carcinoma of the liver as much as 2000 g. of carbohydrate were given to prevent hypoglycæmic symptoms; the rise of blood-sugar after dextrose was not abnormal, and the van den Bergh test was negative. In Wagner and Parnas's much quoted case,[14] a girl with a large liver, who sometimes passed fatty stools in the morning, had hypoglycæmia and ketosis while fasting without symptoms. Glycosuria occurred after giving sugar and starch, and the maximum blood-sugar was 0·43 per cent. two hours after the dose, and the ketosis disappeared. Epinephrine did not cause a rise of blood-sugar.

These examples are enough to show that the symptoms of impairment of hepatic hypoglycæmia may imitate closely the syndrome of hyperinsulinism as ordinarily understood.

THE PRESENT CASE

The case recorded above falls rather into the hepatic than into the pancreatic group of hypoglycæmic cases. Griffiths and de Wesselow's lævulose-tolerance curve indicates some degree of hepatic deficiency (cf. Kimball [15]), while P. J. C. on Dec. 7th, 1932, found that the non-protein nitrogen was 50 mg., which is distinctly above normal, and the "difference values" between the total reducing substances and the true sugar in the blood following the administration of dextrose were increased—both indications of hepatic deficiency. The low values for the basal metabolism obtained by de Wesselow can be correlated with P. J. C.'s finding that the iodine content of the blood was low (Kottmann's reaction); hence there was some associated thyroid deficiency. We did not advise operation.

We have written at some length on this interesting case, because we do want to emphasise the fact that hyperinsulinism may not always be the primary cause of the hypoglycæmic syndrome, arising spontaneously. As Cammidge has pointed out, the liver is more likely to be at fault in these cases.

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SEDIMENTATION-RATE AND ULTIMATE PROGNOSIS IN TUBERCULOSIS

AN INVESTIGATION INTO THE AFTER-HISTORY OF FIVE HUNDRED CASES

By R. R. Trail, M.D. Aberd., M.R.C.P. Lond.
MEDICAL SUPERINTENDENT OF KING EDWARD VII. SANATORIUM, MIDHURST

In a previous paper [1] the value of the sedimentation-rate as a reflection of the immediate benefits of sanatorium treatment was investigated on the experience of 318 clinically tuberculous cases, watched over a period of residence of not less than four months. The technique used was that of the late Dr. Arthur Inman, and was described in the paper; it has been used in all cases admitted since November, 1926.

It is now possible to follow 500 cases over a period of from two to six years after discharge, and therefore to inquire into the value of this test as a factor in estimating ultimate prognosis. These cases are the first 500 consecutive admissions in which a diagnosis of pulmonary tuberculosis was made on a combination of physical and X ray findings and sputum tests. No case is counted positive unless it was positive in the sanatorium and no case has been counted negative on discharge unless there were at least three consecutive negative sputum tests at fortnightly intervals before such date of discharge; 362 of the 500 were T.B.+ and 138 were T.B.− on admission. All cases have been divided into groups according as their sedimentation-rates fall between 1–10, 11–20, 21–30, 31–40 per cent. and over, both on admission and on discharge.

Table I.—*Sedimentation-rates on Admission*

Sed.-rates.	T.B. + cases.			T.B. − cases.		
	Alive. (%)	Dead. (%)	Total	Alive. (%)	Dead. (%)	Total
1–10	36 (94·7)	2 (5·3)	38	53 (100)	—	53
11–20	88 (87·1)	13 (12·9)	101	46 (90·2)	5 (9·8)	51
21–30	61 (60·4)	40 (39·6)	101	18 (85·7)	3 (14·3)	21
31–40 and over	68 (55)	54 (45)	122	9 (69·2)	4 (30·8)	13

Table I. gives the after-history according to the sedimentation-rates on admission, both in T.B.+ and T.B.− cases, the rates given being the mean of the first two readings taken within three weeks of the date of admission.

There is a marked rise in the death-rate with each successively higher reading. This is more evident in the positive cases but the results in negative cases march with them; a figure above 20 in positive cases and above 30 in negative cases means a grave prognosis in that more than 30 per cent. are dead in two to six years after discharge. The totals in each group are also worthy of note, and if the per-

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centage of gross total is worked out, it is found that 61·6 per cent. of positive cases enter the sanatorium with a sedimentation-rate over 20, while 9·4 per cent. of negative cases are over 30 on admission.

Table II. follows the after-history to date; (*a*) follows 216 cases who were positive on admission and discharge, (*b*) 146 cases who were positive on admission and negative on discharge, (*c*) 138 cases who were negative throughout their stay. The average duration of treatment was four months. If the results of sections (*a*) and (*b*) of this table are compared, it is seen that there is a close approximation in prognosis where the sedimentation-rate was under 20 per cent. As in Table I. there is a marked rise in the death-rate where the figure is over 20 per cent., and it is much more marked in those that remain positive until it reaches 52·9 per cent. where the figure is above 30. On the other hand, the prognosis is more than twice as good in those who remained positive and left at a figure under 10 than in those who lost the tubercle in their sputum but left with a sedimentation over 10.

A comparison of sections (*b*) and (*c*) will show the value in prognosis of sedimentation-rates in cases who became negative as against those who had at no time during their residence produced positive sputum. It happens that the gross totals in these sections are almost the same—(*b*) 146 and (*c*) 138—and that the totals in each subgroup are practically the same, so that a comparison of formerly "open" as against "closed" tubercle cases can be read in conjunction with the sedimentation-rates. The prognosis on the whole is not so good in (*b*) as in (*c*). It is interesting to note, however, that there is no marked difference in the prognosis provided the sedimentation-rate on discharge is under 10, while it seems that the prognosis is almost four times better (4·3 : 15·4 per cent.) in those who lost the tubercle in their sputum and left with a sedimentation-rate under 10, as against those who never were positive but left with a sedimentation-rate of over 20.

TABLE II.—*Sedimentation-rates on Discharge*

Sed.-rates.	(*a*) T.B. + on admission and on discharge.			(*b*) T.B. − on admission. T.B. − on discharge.			(*c*) T.B. − on admission and on discharge.		
	Alive. (%)	Dead. (%)	Total	Alive. (%)	Dead. (%)	Total	Alive. (%)	Dead. (%)	Total
1–10	34 (87·2)	5 (12·8)	39	67 (95·7)	3 (4·3)	70	75 (97·4)	2 (2·6)	77
11–20	39 (70·9)	16 (29·1)	55	33 (71·7)	13 (28·3)	46	36 (90)	4 (10)	40
21–30	25 (48·1)	27 (51·9)	52	15 (75)	5 (25)	20	11 (84·6)	2 (15·4)	13
31–40 and over	33 (47·1)	37 (52·9)	70	7 (70)	3 (30)	10	4 (50)	4 (50)	8

Of the 500, 121 (24·2 per cent.) are dead. Sanatorium records show that on discharge 29 of these 121 were on rest as having raised temperatures, and that they had gained no appreciable benefit by their residence; the remaining 92 had normal pulse and temperature and were on exercise varying from attendance at meals to walking exercise up to six miles per day, and they seemed, on the usual critéria of physical signs, pulse, temperature, and "exercise tests" to be making satisfactory progress. These 92, therefore, would appear to warrant closer investigation, with a view to ascertaining whether their sedimentation-rates give any hint as to their liability to break down; 82 of them had been positive on admission, and 60 of these 82 had remained positive; the remaining 10 had never had tubercle in their sputum during treatment. When adjustments are made by subtracting the 29 according to their position in the groups of sedimentation-rates on discharge, Table III. emerges from Table II.

TABLE III

Sed.-rates.	T.B. + on admission. T.B. + on discharge.		T.B. + on admission. T.B. − on discharge.		T.B. − on admission and on discharge.	
	Total.	Dead (%)	Total.	Dead (%)	Total.	Dead (%)
1–10	37	3 (8·1)	70	4 (5·7)	77	2 (2·6)
11–20	52	14 (27)	46	12 (26)	40	4 (10)
21–30	46	19 (41·3)	20	5 (25)	13	2 (15·4)
31–40 and over	56	24 (43)	8	1 (12·5)	6	2 (33·3)

This Table shows, as former Tables, the comparatively small number of patients who lose the tubercle in their sputum and leave the sanatorium at a figure over 20 per cent. Allowing for this, there is a sharp rise in the death-rate of all groups with a sedimentation-rate of over 10. Positive sputum has a decided bearing, but its effect is most seen in readings over 20 per cent., and it is clear that it is far better for a patient to remain T.B. + and leave the sanatorium with a reading under 10 than to become T.B. − and leave with a reading over 10; indeed, such a patient has a better prognosis than one who has never had positive sputum but is discharged with a sedimentation-rate of over 10.

CONCLUSIONS

This investigation appears to show that considerable value must be given to the sedimentation-rate in assessing ultimate prognosis. It is usual to assess such prognosis on physical signs, temperature, pulse, sputum tests, and fitness for exercise judged on the results of "exercise tests." It is well known how such criteria can lead the observer astray; the sedimentation-rate may be a decided help, since the prognosis becomes increasingly grave with the higher rates of sedimentation. To enter the sanatorium with a figure of over 20 and to leave with a figure over 10 means a grave prognosis; this applies to all cases of clinical tuberculosis, "open" and "closed," and while the gravity increases with "open" cases and in particular with those who remain so in spite of treatment, it appears that it is better to remain positive and secure a fall in the sedimentation-rate to under 10, than to be a "closed" case with a discharge figure of over 10.

One method of treatment that reduces the sedimentation-rate was mentioned in the last paper—artificial pneumothorax; the average fall in 20 cases was from 31 per cent. to 14 per cent. Further experience with this treatment has borne out this result. Other methods such as tuberculin (B.E.) are being tested, but the old lesson seems obvious: rest is the best of all treatments. Once the patient has been assessed, as only sanatorium observation can assess him, during his first month's residence, the amount of rest required, the capacity for increasing movement in "graduated rest," and the fitness for return to work ought to be founded as much on the movements of his sedimentation-rate as on his pulse, temperature, "exercise tests," and sputum results. Both immediate and after-history results may be benefited and the physician may be distinctly aided in his difficulty of the evaluation of prognosis.

was a long-standing history of alimentary symptoms which might well affect the liver, and there is a similar history in the present case; and Cammidge [10] and Gammon and Tenery [16] have commented on the frequency of this kind of history in hypoglycæmia.

Such a view makes it necessary to postulate a dissociation of hepatic function—an interference with glycogenic function without disturbances of biliary, urea forming, and uric acid destroying functions, &c. Experimentally this dissociation takes place when most of the liver is removed from a dog.[11] In Nadler and Wolfer's [12] case of carcinoma involving most of the liver the sugar-tolerance curve was very similar to the earlier curves in the present case, and epinephrine did not cause a rise of blood-sugar. Clinically, the patient had typical hypoglycæmic attacks which were hardly controlled with 270 g. of dextrose a day; there was no jaundice or other sign of hepatic deficiency. In Crawford's [13] case of carcinoma of the liver as much as 2000 g. of carbohydrate were given to prevent hypoglycæmic symptoms; the rise of blood-sugar after dextrose was not abnormal, and the van den Bergh test was negative. In Wagner and Parnas's much quoted case,[14] a girl with a large liver, who sometimes passed fatty stools in the morning, had hypoglycæmia and ketosis while fasting without symptoms. Glycosuria occurred after giving sugar and starch, and the maximum blood-sugar was 0·43 per cent. two hours after the dose, and the ketosis disappeared. Epinephrine did not cause a rise of blood-sugar.

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Douthwaite.[6] With the case here described this makes a total of 47 cases; but the list is probably by no means complete.

A striking feature of the more recent cases, and one well exemplified in our case, is the rapidity of progress once improvement is established. How far this is due to the use of the various sera it is difficult to say, but it seems more than likely that they exercise a very potent influence on the course of the disease.

Source of infection.—The great majority of cases arise as the result of some septic condition in the ears, usually a purulent otitis media. Of the cases mentioned above, almost 70 per cent. could be traced to this source. A primary infection in the throat is rare. In Solomon's case meningitis followed an injury to the posterior wall of the pharynx caused by a blow from a curtain pole. In the cases of Vining and Thompson,[7] Cassel, Trounce and Douthwaite, and in Rosenberg and Nottley's own patient, the source of infection appeared to lie in the throat. In our case a somewhat trivial tonsillitis was apparently responsible for the condition. It seems probable that in these cases the meningitis is due to a blood-borne infection, but the possibility of a spread upwards from the nose through the cribriform plate of the ethmoid cannot entirely be excluded.

Type of organism.—In the reports of most of the recovered cases the type of streptococcus is not specified. In ten of Rosenberg and Nottley's series, and in the cases of Leishman and of Trounce and Douthwaite, the causative organism is recorded as being a hæmolytic streptococcus. In five cases, including that of Ebert, the *Streptococcus viridans* was obtained on culture. *S. pyogenes and S. mucosus* have also more rarely been identified.

Treatment.—Lumbar puncture either alone or in combination with some other method is the procedure most generally adopted. Operative measures—e.g., mastoidectomy and labyrinthotomy—have of course been employed, but only where the source of infection lay in the ear. Where a block in the spinal canal has taken place and little fluid has been obtained by lumbar puncture, cisternal puncture has been resorted to (Rosenberg and Nottley). In several cases antiseptics were used to wash out the spinal canal: acriflavine (Neal and Jones [8]) and 1 per cent. mercurochrome (Leishman). More recently, however, serum has been administered in addition to any other procedure. Of the sera employed the antimeningococcal has been that most frequently used in the first instance before a report on the cerebro-spinal fluid has been obtained; and in one case (Ebert) recovery followed the use of this serum alone. Once the true state of affairs has been recognised polyvalent antistreptococcal serum has been extensively used, and results have certainly been better since its introduction. As is shown in the accompanying Table and in the history of this case, its administration can be of great value. In streptococcus antitoxin (scarlatina) globulins, which has more recently become available, we have probably a much more potent agent. Trounce and Douthwaite, using this preparation intravenously and intrathecally, report the most dramatic change in their patient's condition.

In the case here recorded it is difficult to assess its value accurately, since it was not administered until the sixth day of hospital residence and followed the administration of large doses of polyvalent serum, but recovery was so extremely rapid thereafter that it is difficult to avoid the conclusion that the scarlatinal serum was in large measure responsible. More data are, of course, required before any definite conclusions can be drawn concerning the most effective method of administration, but these results appear to us to be most encouraging.

We are indebted to Dr. R. E. Robinson, pathologist to the hospital, for the reports on the cerebro-spinal fluid in this case.

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Clinical and Laboratory Notes

CLICKING KNEE IN CHILDHOOD

By Eric I. Lloyd, M.B. Camb., F.R.C.S. Eng.

SURGEON TO THE HOSPITAL FOR SICK CHILDREN GREAT ORMOND STREET, AND TO THE PRINCESS LOUISE HOSPITAL FOR CHILDREN; ORTHOPÆDIC SURGEON TO THE ROYAL NORTHERN HOSPITAL

In spite of their great activity, children hardly ever damage their semilunar cartilages, and consequently rarely suffer from internal derangement of the knee-joint. This is perhaps odd because it seems likely that the twisting strains of the playground are as great as those of the football field. The common adult injuries are caused by the momentum (*kinetic energy*)—i.e., half the mass multiplied by the square of the velocity of the moving body—and though the velocity may be equal, the mass of the adult is much greater than that of the child. Where the velocity is a constant, the expression $\frac{1}{2}mv^2$ varies directly as the mass and consequently the *kinetic energy* of a moving body of 160 lb. is twice that of one of 80 lb. Probably this is the explanation of childhood's immunity.

There is, however, a small but interesting group of children whose knees are at fault owing to a congenital abnormality. Symptoms are very occasionally delayed (see Case 3), but the same thing happens with a hernial sac of the inguinal canal and both are congenital lesions. It is probable that more than one condition is included in the term "clicking knee," but from a clinical standpoint it is at present impossible to distinguish them.

The following are recent examples from three hospitals:

Case 1.—Hilda A., aged 8½. (Hospital for Sick Children, Great Ormond-street.) Clicking of left knee since birth. She could make it click, and kept herself awake by doing so. Operation (Dec. 31st, 1931): external cartilage appeared normal, and was not disc-like; internal cartilage seemed to be unduly mobile posteriorly and was removed. Thirteen months later there was no disability, and her knee has not clicked since the operation.

Case 2.—Lucy B., aged 12. (Princess Louise Hospital for Children.) Child had suffered from extensive poliomyelitis of both lower limbs for many years, and both knees had clicked ever since she could remember. Operation (July 12th, 1932): removal of right external semilunar cartilage, which was more or less of a disc. Operation (July 19th): removal of left external semilunar cartilage; the knee was seen to "jump" over the outer part of the cartilage; a large and disc-like cartilage was removed. She never clicked her knee again, and was apparently cured of the condition when seen six months later.

Case 3.—Ronald C., aged 12½. (Royal Northern Hospital.) Onset of symptoms referred to a gymnastic display three

CASE OF STREPTOCOCCAL MENINGITIS
WITH RECOVERY

By J. K. Rennie, *M.C.*, B.Sc., M.D. Glasg.
PHYSICIAN, ST. LUKE'S HOSPITAL, BRADFORD
AND
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Streptococcal meningitis, except as a complication of some otitic infection, is rare, and recovery in any event is uncommon. The following case illustrates both these phenomena and is therefore regarded as worthy of record.

HISTORY OF THE CASE

A labourer, aged 23, was admitted to hospital on Oct. 20th, 1931, complaining of severe headache which had persisted since its onset on Oct. 15th. Associated with this headache there had been periods of mild delirium, giving place to marked drowsiness. Vomiting occurred only once and that at the commencement of the illness. On the evening of Oct. 19th a rise in temperature was first noted, and complaint was made of aching pain in the back and of diplopia.

When first seen in hospital the patient was conscious but extremely drowsy. He answered questions correctly, but speech was slow and drawling. Respirations were sighing and irregular, 20 per minute. The temperature was 102° F.; the pulse-rate was regular, 80 per minute. Very definite nuchal rigidity, slight opisthotonos, and bilateral Kernig's sign were present. Ptosis of the left upper eyelid and a pronounced convergent strabismus were evident. The pupils reacted to light and on accommodation. The right pupil was larger than the left. Both external recti were paralysed. Other eye movements were normal. The right knee-jerk and both ankle-jerks could not be elicited. All other deep reflexes were active. The plantar reflexes were both flexor. There were no spots anywhere on the skin, but *tache cérébrale* was very marked. The tongue was dry and glazed, and there was much sordes around the lips but no herpes. Nothing was found in the ears or in the accessory sinuses. The tonsils were enlarged and inflamed.

TABLE SHOWING PATHOLOGICAL CHANGES WITH SERUM

Day of disease.	Chlorides mg. per 100 c.cm.	Sugar per cent.	Protein per cent.	Globulin.	Gold curve.	Culture.	C.S.F. amount c.cm.	Cell count per c.mm.	Serum.		Leucocyte count.
									I.T.	I.M.	
20/10/31	643	0·02	0·045	Present.	0000122321	No growth.	60	90	—	—	—
21/10/31	660	—	0·12	„	0000122232	Non-hæmolytic streptococcus.	60	200	35 A.M.	—	28,000
22/10/31	670	—	0·16	„	000033321	„	60	450	35 P.A.	20 P.A.	—
23/10/31	676	—	0·28	„	0000134432	„	60	800	35 P.A.	—	48,000
26/10/31	—	—	—	—	—	No growth.	7	—	(24/10/31) 20 P.A. (25/10/31) 25 P.A. 20 S.A.		—
2/11/31	726	0·06	0·28	Present.	0011243300	„	15	—	(27/10/31) 20 S.A. (28/10/31) 20 S.A. (29/10/31) 20 S.A.		--

A.M. = Antimeningococcus serum.
P.A. = Antistreptococcus (polyvalent) serum.
S.A. = Streptococcus antitoxin (scarlatina) globulins.
I.T. = Intrathecally.
I.M. = Intramuscularly.
C.S.F. = Cerebro-spinal fluid.

On admission a diagnosis of basal meningitis was made; lumbar puncture was performed with no great relief, and morphia was required on account of persistent headache. The cerebro-spinal fluid was faintly turbid but contained no organisms; 60 c.cm. was withdrawn. Next day there was no change. The patient had had no sleep despite morphia, and intense headache persisted. The temperature was 103° and the pulse-rate 90. Lumbar puncture was again performed; 60 c.cm. was withdrawn, and 35 c.cm. of antimeningococcus serum was *injected intrathecally*. The fluid withdrawn gave a growth of non-hæmolytic streptococcus on culture. A throat swab gave streptococcal and staphylococcal growths.

Headache was rather less severe next day (Oct. 22nd), when again 60 c.cm. of cerebro-spinal fluid was withdrawn, and 35 c.cm. of antistreptococcus (polyvalent) serum was administered intrathecally and 20 c.cm. intramuscularly. He was quiet during the 23rd. Photophobia was present. At lumbar puncture 60 c.cm. of fluid was obtained, more yellow and turbid than previously, but not markedly under pressure; *35 c.cm. of antistreptococcus serum was again* given intrathecally. At night severe epistaxis occurred, and the patient became violently, almost maniacally, delirious. His mental condition appeared clearer in the early part of the next day (Oct. 24th), but towards afternoon he fell into a low muttering delirium. Nevertheless he recognised relations and carried on a brief rational conversation with them. Headache was still severe. Antistreptococcus serum (20 c.cm.) was given intramuscularly. Mild delirium was present during most of the 25th, and 25 c.cm. of antistreptococcus serum was injected intramuscularly. At midnight a sudden worsening of his condition occurred, delirium becoming more pronounced and breathing distinctly Cheyne-Stokes. Lumbar puncture next morning at first *yielded no fluid, but by gentle aspiration a number of thick,* purulent, fibrinous flakes were obtained and afterwards about 7 c.cm. of yellow fluid. Streptococcus antitoxin (scarlatinal, B. W. and Co., 20 c.cm.) was given intramuscularly, *and on the following day he was talking* rationally and taking an interest in his surroundings. Pain was still acute in the back of the neck and head. The antitoxin was repeated on this and the two subsequent days. On Oct. 28th the nuchal and head pains were less severe and diplopia was much less pronounced. The patient demanded more nourishment.

The temperature had fallen to normal on Oct. 29th and there was a dramatic change in the picture. The patient was ravenous and he was able to read the morning paper. A very profuse serum rash appeared and lasted four days but rapid improvement continued. The nuchal rigidity was practically absent on Oct. 30th and he could easily nod his head. Sleep was prolonged and natural. The plantar reflexes were extensor on Oct. 31st. On Nov. 2nd lumbar puncture yielded 15 c.cm. clear fluid, not under pressure.

On Nov. 12th Kernig's sign was still present, and staphylococci and streptococci were found on a throat swab. On Dec. 12th there was still a tendency to rapid pulse and pain in the region of the fourth lumbar spine. The right plantar reflex was extensor, the left flexor. Diplopia was still present on Dec. 20th and the right plantar reflex still gave a dubious extensor response. He could now touch his toes with his fingers. He was discharged on Dec. 24th.

On March 8th, 1932, he was readmitted to hospital for tonsillectomy. A throat swab gave sparse streptococcus culture, also staphylococcus growth. He ran a post-operative temperature for 12 days and was not fit for final discharge until March 26th, at which time examination revealed no sign of organic disease or permanent damage. There was no evidence of weakness of the ocular muscles.

DISCUSSION

Recovery in these cases is, as already stated, comparatively rare. Rosenberg and Nottley[1] have collected 41 cases from the literature, and further cases have been recorded by Solomon,[2] Cassel,[3] Ebert,[4] Leishman,[5] and recently by Trounce and the involved ear. I made a diagnosis of zygomatic mastoiditis.

On Oct. 26th the child was admitted to the nursing home. The mastoid was exposed by the usual incision, the tissues were separated over the zygoma and a quantity of pus flowed out, revealing a mouse-eaten appearance of the zygomatic process and squama of the temporal bone anterior to the auricle. On removing the cortex, a small-celled mastoid was uncovered, showing pus in the cells around the antrum, and a general osteomyelitis of the whole process, extending up to the dura and behind and around the lateral sinus; the cells at the tip were small (and were not macroscopically involved). The sinus wall was not involved. The incision was then prolonged along the zygoma and the posterior half of the zygomatic process was removed. This part did not appear to contain any large cells. The necrosed squama anterior to the auricle was chiselled away, exposing the dura. The wound was Bipped, gauze was applied to a bleeding dura vessel, and two drainage-tubes were inserted.

On Nov. 15th pressure on the healed mastoid wound resulted in sero-pus filling the external auditory meatus, so a small drainage-tube was introduced into the lower angle of the wound, and the patient was discharged to her home on a farm.

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was opened by Dr. Robert Hutchison. Diarrhœa, he said, was a symptom and not a disease. He classified the chronic non-tropical diarrhœas into five groups:

(1) The *gastrogenic group,* in which diarrhœa was associated with achlorhydria, though the relation between the two was obscure. In these cases, administration of dilute hydrochloric acid cured the diarrhœa; if this treatment proved unsuccessful, the diarrhœa was not gastrogenic in origin.

(2) The *fatty diarrhœas.* This group included those conditions in which there was an excess of unsplit fat in the stools—namely, congenital steatorrhœa, pancreatic diarrhœa, cœliac disease, non-tropical sprue, and cases in which obstruction of the lacteals, for example by tuberculosis, interfered with the absorption of fat.

(3) Diarrhœa due to *enteritis* or catarrh of the small intestine. This might be due to some irritant such as alcohol, to gross errors of diet, to the toxins of disease such as tuberculosis (which might cause catarrh quite apart from ulceration), or possibly to the elimination of poisons, as in uræmia. Putrefactive and fermentative diarrhœa were varieties of enteritis due to the maldigestion of proteins and carbohydrates respectively. Catarrh of the small intestine could be diagnosed by the finding of bile-stained mucus in the fæces on microscopic examination.

(4) The *colonic diarrhœas* included catarrhal conditions which might become chronic, giving rise to morning diarrhœa; ulcerative colitis of the dysenteric and non-dysenteric varieties; obstructive diarrhœa due to new growth, or sometimes in elderly people to scybala.

(5) *Neurogenic diarrhœa* might be of the reflex type seen in children, in which the gastro-colic reflex seemed to be set on a hair trigger; or the psychogenic type, in which emotional excitement fired off the bowel. The neurogenic type of diarrhœa might be engrafted on an organic type, owing to loss of confidence on the part of the patient. Diagnosis, in every case, demanded a careful history; physical examination of the whole patient; naked-eye and microscopic examination of the stools and possibly estimation of their fat content; digital examination of the rectum and perhaps sigmoidoscopy; and sometimes the administration of a test-meal and sometimes an X ray examination following a barium enema. In many cases the diagnosis would remain uncertain, and any given case might fall into one or more categories.

DIARRHŒA IN THE TROPICS

Dr. P. H. Manson-Bahr said that diarrhœa of some kind was the almost invariable concomitant of life in the tropics, and it was dangerous to assume that most of the tropical diarrhœas were due to amœbic dysentery. The result of this assumption was that every case was dosed with emetine, and as one of the symptoms of emetine poisoning was diarrhœa the last case of the patient might be worse than the first. Bacillary dysentery was much commoner than had been supposed, and the chronic form of the disease often went unrecognised. In amœbic dysentery the onset was usually insidious, there was little pyrexia, the course was prolonged, emaciation was rare, and leucocytosis moderate; in chronic bacillary dysentery the onset was often acute, pyrexia marked, the course prolonged, emaciation extreme, and there was no leucocytosis. Sigmoidoscopy in cases of chronic bacillary dysentery showed the mucous membrane to be corrugated and eroded; the colon formed a rigid tube with granulations on the surface which bled when touched; the diagnosis was made on the history and by serum agglutination. Idiopathic ulcerative colitis might occur in the tropics, and was usually diagnosed as dysentery; the prolonged use of emetine was harmful in this condition and in chronic bacillary dysentery. In idiopathic ulcerative colitis the mucous membrane looked like red plush and bled easily; diagnosis from bilharzia could be made by finding the eggs of the parasite in scrapings from a granulating patch. Polyposis might be a sequel of chronic bacillary dysentery or ulcerative colitis. Chronic malarial diarrhœa was often diagnosed as dysentery; the parasite could be found in the stools and treatment must be directed against the malaria. In sprue, emaciation was always marked; the condition was liable to be confused with pernicious anæmia and pancreatitis. Cœliac disease occurred among children in the tropics; it should not be confused with sprue, which he was convinced did not occur in young children.

SPURIOUS DIARRHŒA

Mr. Lionel Norbury said that diarrhœa might be true or spurious; it was with spurious diarrhœa that the surgeon was concerned—by which he meant months previously, when patient was kneeling. On attempting to stand, his knee would not go straight for a time and had often clicked since. Operation (May 11th, 1932): the external cartilage formed almost a complete disc, and was removed. Six weeks later he had normal range of movement, and was quite unable to make his knee click. Seven months after operation he was able to play football, and has had no trouble at all with his knee, which has not clicked since his operation.

The usual adjective applied to these knees is not particularly well chosen. It quite wrongly calls to mind the clicks which we all hear from time to time in our own healthy joints, and of which the bonesetter is a notorious exploiter. The clicking knee of childhood always evinces itself on the outer side of the joint, and generally about three-quarters of the way from flexion to active extension. Passive movement sometimes fails to elicit the click but at other times is successful. The patient is often better than the surgeon at producing it but this need not surprise us.

If this matter of the click is pursued a little further it will be found to resolve itself into the audible click and, in addition, a visible and palpable bump. The sound is often the least conspicuous part of it, for as the limb passes towards extension the external tuberosity of the tibia is seen and felt suddenly bumping and jolting forward on the femur like the wheel of a train running over an obstacle. It may be thought folly to strain at a click and swallow a bump, but it is difficult to find a word which better describes the simultaneous perceptions of three sense organs.

I have paid particular attention to this matter of the click, bump, or jolt, because radiograms are normal and a history of injury is generally absent. We are confronted simply and solely with a knee which clicks.

It is true that other symptoms are absent except an occasional complaint of weakness in the joint, and that the disability is generally slight, nevertheless, operation should be advised in view of the following considerations: (1) It is unbelievable that such a condition will right itself. (2) It may predispose to osteo-arthritis in later years. (3) It may be the precursor of one of the more familiar injuries of adult knees. (4) It is cured by the removal of the affected external semilunar cartilage if that structure is found to be a complete disc instead of the normal shape. If this condition is not present the click is caused by less well-defined abnormalities which may be discovered and remedied at operation. (See Case 1.)

ZYGOMATIC MASTOIDITIS

BY W. S. THACKER NEVILLE, M.D. DUB., F.R.C.S. EDIN.

I AM reporting the following case because there were no symptoms or signs of mastoid involvement, although pus was found in the mastoid as well as around the zygoma.

The involvement of the base of the zygomatic process is so common in acute mastoiditis that, just as one never performs an operation for acute mastoiditis without opening the cells at the tip of the mastoid, so one always chisels superiorly and anteriorly forwards in order to explore the cells in the base of the zygoma. This step, however, may not expose the infected cells, for Mollison, quoting Holmgren, says that the cells in the squamo-zygomatic mastoid portion of the temporal bone may be separated into two groups, an anterior group quite separated by non-cellular bone from a posterior group.

Of the five cases of zygomatic mastoiditis reported by Mollison, three presented the same features as this case. As in four of Mollison's cases, this patient had an otorrhœa and also was markedly deaf, which Mollison considers to be a valuable sign pointing to involvement of the mastoid even in the absence of an otorrhœa. MacCuen Smith, in his article on the method of involvement of the zygoma, shows a typical photograph of zygomatic mastoiditis with absence of swelling and tenderness on the mastoid. This case is unlike the cases reported by Nicol Rankin in that his cases showed swelling over the mastoid as well as over the temporal region. Horgan's cases were also unlike this one in that they followed a mastoiditis on which a Schwartze operation had been done. Watt's case resembled Nicol Rankin's cases in that it was an example of disease of the mastoid extending along the zygoma. His case, however, was peculiar in that the whole zygomatic process, including the cells on the outer aspect of the orbit, was involved.

Muecke described two types of zygomatic mastoiditis; the first, seen in children, resembles a parotitis but reveals itself as a true mastoiditis in a few days by signs appearing over the mastoid. The case reported here corresponds to this type in its resemblance to parotitis, but differs in that the mastoid signs were absent. Muecke's second type appears in adults and is similar to the first, except that there is less likelihood of signs on the mastoid, but rather there is pain and swelling over the orbit, simulating a frontal sinusitis.

Bernstein's case closely resembled the one reported below, for the swelling extended anteriorly as far as the eye. However, on the second day it also extended back over the mastoid. In his case the diagnosis was rendered more difficult, as the puncture of a dull tympanic membrane did not reveal pus. Mill's case resembled the case reported here in that the zygoma was bare and the swelling appeared in the parotid region, but in his case there was a marked tenderness of the mastoid and so there was no difficulty in diagnosing the case as one of mastoiditis.

CASE RECORD

A girl, aged 11, was seen by the family physician on June 11th, 1932, for earache following a feverish cold. On Oct. 8th she went to the doctor's surgery, as the ear had been discharging for six days.

On Oct. 10th, 11th, and 12th she was seen in her home. Her temperature was 102° F., and the ear was discharging and very painful. On Oct. 13th a swelling appeared over the zygoma, but there was no swelling or tenderness of the mastoid, which was repeatedly examined.

The temperature remained at 102° F. for the first week and then fell to normal during the second week, and the swelling over the zygoma subsided. On Oct. 25th the temperature rose to 102° F., and the swelling over the zygoma suddenly increased. I was asked by the family physician to see the child in order to open an abscess in front of the ear.

Examination (Oct. 25th) showed that the tympanic membrane was perforated and discharging a small quantity of pus. A large non-fluctuating swelling was seen over the left parotid region, reaching to the outer angle of the left eyebrow. Neither fluctuation nor tenderness was present on the tip or on the base of the mastoid. An acutely tender spot was present above the left auricle. Tuning fork tests demonstrated middle-ear disease. A 60 in. watch was heard at 60 in. by the good ear but only at 1½ in. by the involved ear. I made a diagnosis of zygomatic mastoiditis.

On Oct. 29th the child was admitted to the nursing home. The mastoid was exposed by the usual incision, the tissues were separated over the zygoma and a quantity of pus flowed out, revealing a mouse-eaten appearance of the zygomatic process and squama of the temporal bone anterior to the auricle. On removing the cortex, a small-celled mastoid was uncovered, showing pus in the cells around the antrum, and a general osteomyelitis of the whole process, extending up to the dura and behind and around the lateral sinus; the cells at the tip were small (and were not macroscopically involved). The sinus wall was not involved. The incision was then prolonged along the zygoma and the posterior half of the zygomatic process was removed. This part did not appear to contain any large cells. The necrosed squama anterior to the auricle was chiselled away, exposing the dura. The wound was Bipped, gauze was applied to a bleeding dura vessel, and two drainage-tubes were inserted.

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CASE RECORD

A girl, aged 11, was seen by the family physician on June 11th, 1932, for earache following a feverish cold. On Oct. 8th she went to the doctor's surgery, as the ear had been discharging for six days.

On Oct. 10th, 11th, and 12th she was seen in her home. Her temperature was 102° F., and the ear was discharging and very painful. On Oct. 13th a swelling appeared over the zygoma, but there was no swelling or tenderness of the mastoid, which was repeatedly examined.

The temperature remained at 102° F. for the first week and then fell to normal during the second week, and the swelling over the zygoma subsided. On Oct. 25th the temperature rose to 102° F., and the swelling over the zygoma suddenly increased. I was asked by the family physician to see the child in order to open an abscess in front of the ear.

Examination (Oct. 25th) showed that the tympanic membrane was perforated and discharging a small quantity of pus. A large non-fluctuating swelling was seen over the left parotid region, reaching to the outer angle of the left eyebrow. Neither fluctuation nor tenderness was present on the tip or on the base of the mastoid. An acutely tender spot was present above the left auricle. Tuning fork tests demonstrated middle-ear disease. A 60 in. watch was heard at 60 in. by the good ear but only at 1½ in. by

Chronic exhausting diseases. such as phthisis. were stated to have some connexion with the condition.

Dr. J. F. CUNNINGHAM considered that Dr. Solomons had been fortunate in being able to make the diagnosis fairly early. as Cæsarean section became necessary. In an ordinary case. he thought. the diagnosis would be difficult until an attempt was made to remove the placenta.

Dr. A. H. DAVIDSON said he had seen one case. He wondered if the condition were connected with some failure of the corpus luteum. Occasionally. in cases where manual removal of the placenta was needed. it proved possible to get a portion separated. while other portions would not come away. The chief difficulty was to know when to stop trying to take out the placenta. Radical treatment appeared to be the only treatment for the condition.

Dr. NINIAN FALKINER said he regarded placenta accreta in somewhat the same light as an ectopic pregnancy. because it undoubtedly was ectopic. The end-result of placenta accreta was that the chorionic elements were intertwined with the muscles of the uterine wall. This was the condition met with in ectopic pregnancy. He thought that in Dr. Solomon's case there must have been pre-existing inflammation.

Dr. SOLOMONS. in reply. said that the placenta was in the upper segment. When he said that the diagnosis should be made as soon as possible. he meant that in a case of pelvic delivery efforts to remove the placenta should not be persisted in. and radical treatment should be undertaken. as soon as the diagnosis of placenta accreta was made. Among explanations of the condition failure of the corpus luteum might always be thought of. but it was more probably due to an inflammatory condition of the endometrium by which chorionic elements could get between the glands to the muscle.

Dr. O'DONEL BROWNE read a paper on the Use of Pituitary Extract in Labour. and Dr. CUNNINGHAM a paper on Late Ectopic Pregnancy.

Chorion-epithelioma of Fallopian Tube

At a meeting of the section of pathology on Feb. 10th. with Dr. J. MCGRATH. the president. in the chair. Prof. T. T. O'FARRELL showed a specimen and reported the following case :—

A woman. aged 35. had been married 15 years and had two children, the last having been born 11 years previous to the present illness. Menstruation had been of the 28-day type and of five days' duration. the amount being heavy. Last period, Oct. 14th. Present illness: uterine hæmorrhage began on Dec. 5th. 1932; was not heavy. and lasted 14 days. There was no pain at this time, but there was slight pain in the lower abdomen during the following seven days. Hæmorrhage during this time became more marked. and before admission to hospital there was acute pain in the lower abdomen for 12 hours.

On admission (Dec. 26th) the patient was in a condition of shock; pulse-rate 125. temp. 97 F. There was acute tenderness and rigidity over the lower half of the abdomen. especially in the left iliac fossa. On vaginal examination the uterus was found to be small. hard. and in good position. A vague cystic mass was felt behind and on both sides of the uterus. At operation the pelvic cavity was seen to be filled with blood clot with a little fresh blood. The fimbriated end of the right tube looked as if an ectopic pregnancy had ruptured through the end. The right tube was removed. A large pyosalpinx was observed on the left side. The abdomen was closed. leaving a drainage-tube in position. Subsequent history: the lungs were radiographed with a negative result. The patient refused further operation and. after an uneventful recovery, left hospital in three weeks. not returning subsequently.

The lumen of the tube. Prof. O'Farrell said. contained chorionic villi of about the fourth week type. and at one point there was definite invasion of the musculature. At this spot typical villi were scanty, there was marked proliferation of Langhans's cells. many of which contained mitotic figures, and there were comparatively scanty syncytial masses. These structures occupied about four low-power fields of the microscope and were indistinguishable from chorion-epithelioma malignum. In discussing the case. Prof. O'Farrell asked his hearers by what criteria they would judge whether the specimen was an early malignant tumour or a benign condition.

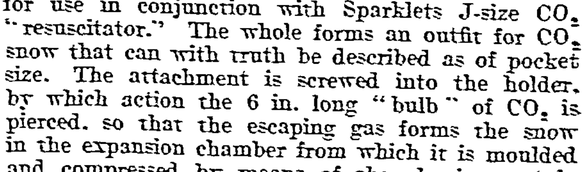
The PRESIDENT said that cases of tubal pregnancy were frequently seen. and if chorionic villi were malignant. then all these cases would be malignant—which was not so. But he thought the present specimen was a chorionic epithelioma.—Prof. J. T. WIGHAM said it was usual to find some cystic condition of the ovary in cases in which there was chorionic epithelioma. He thought that if the ovary was found to have a normal corpus luteum on the affected side, that it would be rather against the idea that the condition was becoming malignant. He thought that chorionic epithelioma was either very rapidly malignant or else that it could be readily removed, when it proved to be histologically malignant but clinically non-malignant.—Dr. R. M. CORBET said he thought the luteinisation of the ovary was the effect of too much trophoblast. It was the deciduum which influenced the ovary, and not the ovary which influenced the deciduum.—Dr. BETHEL SOLOMONS thought it looked as if the condition were definitely locally malignant. and that the patient would not be troubled again. He had almost never, he said, seen malignancy after a simple hydatidiform mole.

Other specimens were shown.

NEW INVENTIONS

A NEW POCKET CO_2 SNOW OUTFIT

THE use of carbon dioxide snow in general practice for the treatment of nævi. warts. and other skin conditions has been greatly hampered by the inconvenience of obtaining the requisite supplies of CO_2, even the most "portable" apparatus being cumbersome. involving the carriage and transportation of heavy cylinders. This deficiency has been remedied by a small attachment in nickelled brass and ebonite for use in conjunction with Sparklets J-size CO_2 "resuscitator." The whole forms an outfit for CO_2 snow that can with truth be described as of pocket size. The attachment is screwed into the holder, by which action the 6 in. long "bulb" of CO_2 is pierced. so that the escaping gas forms the snow in the expansion chamber from which it is moulded and compressed by means of the ebonite spatula supplied. Each "bulb" of CO_2 will provide a rod of solid snow about 1½ in. long and ⅝ in. in diameter. The apparatus is held pointing vertically downwards, so that the CO_2 may be emitted into the expansion chamber in its liquid form. The bulbs are inexpensive. empties are returnable for refilling and—most important—can be sent by post. The whole apparatus measures about 10 in.. and the accompanying illustration shows its essential simplicity.



The attachment is made by Sparklets, Angel-road, Upper Edmonton, N.18.

S. SHONE. M.D.. M.R.C.P.

diarrhœa in which the patient passed mucus, blood, and pus, perhaps mixed with fæcal matter. The most common lesions causing these symptoms which the surgeon was called upon to treat were ulcerative colitis and proctitis and their sequelæ, tumours of the colon, and colonic diverticulitis. In ulcerative colitis there were frequent motions with the passage of blood, mucus, pus, and sloughs. It was a disease of early adult life, and was sometimes supposed to be of dysenteric origin because Flexner's bacillus had been found in a case. At St. Mark's Hospital routine culture from the stools had invariably given negative results, and in no case had the patient's serum agglutinated Flexner's or Shiga's dysentery bacilli. Sigmoidoscopy showed œdema in the early stages and later irregular areas of ulceration covered with bleeding granulations and mucous sloughs. The mucous membrane between the ulcers might become polypoid, and healing might be followed by stricture formation. The ulcers were distributed in three bands, opposite the three longitudinal bands of muscle running along the intestinal wall. Diagnosis was suggested by the symptoms and confirmed by sigmoidoscopy; the sigmoidoscope should be passed with care owing to the danger of perforation. Achlorhydria had been demonstrated in some cases and symptoms had improved when dilute hydrochloric acid was given by mouth; calcium deficiency was also blamed, but calcium therapy had produced little benefit. Ulcerative proctitis might coexist with ulcerative colitis, or might occur separately. Stricture might follow ulcerative proctitis. Treatment of carcinoma of the cervix with radium might cause proctitis, with liability to stricture formation. Gonorrhœal proctitis might be diagnosed by finding the organism in a smear in the early stages. Syphilitic or gonorrhœal proctitis might give rise to multiple strictures associated with ulceration above and below. The possibility that these so-called gonococcal and syphilitic strictures were due to the virus responsible for lymphogranuloma inguinale had to be borne in mind. Tuberculous proctitis was rare. Simple tumours of the colon and rectum might give rise to spurious diarrhœa and so might polyposis intestini, a familial disease affecting young adults, in which there was a tendency to malignant transformation. Carcinoma of the colon or rectum could be diagnosed by sigmoidoscopy and removal and section of a portion of the growth. A barium enema was of little use in the diagnosis of carcinoma of the recto-sigmoid because this region was masked by the presence of barium in the rectum itself.

DISCUSSION

Mr. E. T. C. MILLIGAN differentiated between non-tropical ulcerative proctocolitis and granular proctocolitis. In ulcerative proctocolitis, he said, there was deep ulceration, much discharge, and loss of elasticity of the bowel wall, with a tendency to deformity and stricture; digital examination was painful; microscopic examination showed leucocytic infiltration and disappearance of lymphoid tissue. The temperature was usually high and the patient anæmic and emaciated; the prognosis was uncertain. In granular proctocolitis, on the other hand, there was redness of the bowel mucosa but no ulceration, and no loss of elasticity or deformity; digital examination was not painful; microscopic examination of a snipping showed no destruction of lymphoid tissue. Temperature and pulse were little raised, and the patient was robust and able to work. Ultimate resolution was complete.

Dr. G. VILVANDRÉ said that if radioscopy was properly performed carcinoma of the recto-sigmoidal region could be demonstrated perfectly. The rectum loaded with barium had to be pushed to one side. Moreover, a radiogram taken after evacuation of the bowel showed the anatomy of the sigmoid delicately outlined in barium.

Dr. N. HAMILTON FAIRLEY asked whether the cases mentioned by Dr. Hutchison in which there was achlorhydria were cases of true achylia gastrica, and whether any of them had shown symptoms of subacute combined degeneration. It was rare, he said, for the bacillus to be isolated from so-called cases of chronic dysentery in this country. He considered that some cases of proctitis fell between the two groups portrayed by Mr. Milligan.

Dr. M. A. ARAFA said that he had recently seen cases of catarrhal enteritis in Vienna where diagnostic significance had been attached to the presence of a tender spot to the left of the umbilicus, and to large amounts of split fat in the stools.

Dr. JULIUS BURNFORD pointed out that Dr. Hutchison's classification was based partly on ætiology and partly on symptomatology.

The PRESIDENT said that he had been unable to find any proof that stricture of the rectum was ever due to syphilis or tuberculosis, and the evidence in favour of gonorrhœa or chancroid as causal factors was negligible. It was doubtful whether this condition was due to any of the causes to which it had been attributed in the past.

In replying, Dr. HUTCHISON said that any classification of diarrhœas could be criticised. There had been no signs of pernicious anæmia or subacute combined degeneration among his achlorhydria cases. Dr. MANSON-BAHR and Mr. NORBURY also replied.

ROYAL ACADEMY OF MEDICINE IN IRELAND

A MEETING of the section of obstetrics was held on Feb. 3rd, with Dr. D. G. MADILL (in the absence of the president) in the chair. A communication on

Placenta Accreta

was made by Dr. BETHEL SOLOMONS and Dr. F. S. BOURKE. The cause of the condition, they said, was unknown, and it was very rare; there had not been one example at the Rotunda Hospital in the last 25,000 births. It could be diagnosed only when efforts to remove the placenta had failed, there being no line of cleavage. The consensus of opinion was that hysterectomy is the best treatment.

The case reported was that of a woman, aged 41, who in her first confinement lost a baby after a long and dry labour. The baby had died in utero about two days before it was born. On the present occasion she was about 36 weeks pregnant when liquor amnii began to come away. This loss continued for three days, but the cervix remained closed. After a consultation Cæsarean section was decided on. All attempts to remove the placenta failed entirely. There was no line of cleavage, and hysterectomy was done. The convalescence was without incident.

The CHAIRMAN said that placenta accreta had been described only in the last ten years, and he had never seen a case. He asked if the placenta in this case was low down in the uterus, or if it was in the fundal region. The only treatment in these cases was radical treatment. He thought it would be very difficult to make a diagnosis with the naked eye.

Malassez is only one of the factors involved in the ætiology of this widespread and troublesome affection.

The section on the treatment of syphilis remains unaffected by recent controversy, for, as the author says, "there is no routine treatment for syphilis." A schedule of treatment is unfortunately necessary, but it must not be too closely followed, and the interests of the individual patient must always be paramount. For this reason some dermatologists may criticise the suggested administration of six consecutive weekly injections of 0·9 g. N.A.B. to the average adult male as being rather a strain on the liver and the excretory mechanism, and apt to lead to exfoliative dermatitis, the "formidable complication . . . most likely to occur in cases subjected to intensive treatment." Similarly, the treatment of chronic sycosis barbæ by painting small patches at a time with the liquid acid nitrate of mercury (p. 53) seems rather a drastic measure to recommend to the practitioner. Dr. Mackenna has published several interesting observations on the treatment of lupus erythematosus by bismuth salts, which, in his opinion, is the method of choice. Gold compounds should be reserved for the cases which fail to respond to the bismuth therapy, which has at least the advantage of comparative safety. This section and the illustrations which accompany it are well worthy of consideration and study.

This text-book is well up to modern standards, and will doubtless remain popular.

Classic Descriptions of Disease

By RALPH H. MAJOR, M.D., Professor of Medicine, University of Kansas School of Medicine. London: Baillière, Tindall and Cox. 1932. Pp. 630. 30*s*.

THIS book is a collection of classical descriptions of disease selected by Prof. Major, and biographical sketches of the authors are included. The choice is mainly on clinical grounds and is a very wide one, as it embraces the work of 179 different authorities ranging from Hippocrates and the Papyrus Ebers to observers still alive. There are 130 illustrations.

The subject matter is arranged under ten headings. The first section deals with infectious diseases—namely, syphilis, tubercle, plague, tetanus, diphtheria, typhus, typhoid, scarlet fever, small-pox, measles, influenza, sweating fever, chicken-pox, whooping-cough, rheumatic fever, relapsing fever, sleeping sickness, Schönlein's disease, and finally focal infection and Hodgkin's disease. Diseases of metabolism include diabetes, thyroid disease, tetany, gout, pernicious anæmia, Paget's disease, achondroplasia, osteomalacia, myositis ossificans, acromegaly, Fröhlein's disease, and persistent thymus. The next section deals with lead poisoning and the remaining ones with diseases of the circulatory system, the blood, kidney diseases, respiratory diseases, deficiency diseases, and diseases of the digestive tract.

In the preface Prof. Major makes a graceful acknowledgment of the help he has received from others in his formidable task. Largely no doubt through the labours of Sir Humphry Rolleston, Caleb Hillier Parry of Bath here receives the just merit due to him for having been the first to describe hyperthyroidism. It may interest English readers also to hear that William Cowper, while not the first to describe the urethral glands named after him, appears to have been the first to describe and figure disease of the aortic valves in a paper contributed to the Philosophical Transactions of 1706. The notice of Richard Morton (1637–1698) omits to mention his recognition of herpes simplex as a specific febrile disease—a very remarkable achievement to which Levaditi has drawn attention. We are told that Kussmaul in 1874 was the first to employ thoracentesis, but the late Sir Norman Moore used to ascribe that honour to John Locke, the great philisopher, who was an M.B. of Oxford, and at one time had charge of a patient suffering from a pleural effusion.

Prof. Major's book was evidently a labour of love. It is compiled with much care and will be of considerable service to those who wish to have historical contributions to clinical medicine in a readily accessible form.

L'année thérapeutique

By Dr. A. RAVINA. Sixth and seventh years, 1931 and 1932. Paris: Masson et Cie. Pp. 182 and 176. Fr.16 per vol.

THE series of "L'année thérapeutique" has now reached its seventh year, having been started in 1921, but interrupted in 1924 by the death of the former editor, Dr. Cheinisse. The object of these little volumes is to provide a summary of new work in treatment, of new methods, and of changes taking place in the whole field of therapeutics. Dr. Ravina has not limited himself to one branch of medicine, but has divided the subject into three sections: the first on diseases and symptoms, the second on methods of treatment, and the third on new drugs. In all such works the difficulty lies essentially in evaluating recent work. Dr. Ravina has, for the most part, contented himself with summarising numerous papers published, principally in France and Germany, without offering criticisms or judgment upon their value. Many of the papers referred to will be new to English readers, and the results recorded will not be too readily accepted.

In the last volume (1932) the "new" drugs mentioned include the mercurial diuretics, nembutal, hæmolytic and antistreptococcal sera, and extracts of convallaria and adonis in heart disease. In pulmonary tuberculosis Dr. Ravina regards sanocrysin treatment as established. Other methods described include the use of atebrin in malaria, suprarenal cortical extracts in Addison's disease, liver extract injections in pernicious anæmia, and many other less well-known innovations. Some of these such as the apple cure in infantile diarrhœa, ovarian extract treatment of hæmophilia, the use of pancreatic extracts in scleroderma and Ménière's disease will strike the English reader as requiring further confirmation.

Books in this series contain information that cannot easily be found elsewhere in collected form, and if read with proper caution and perspective should be of real help to practitioners.

Animal Diseases in South Africa

By M. W. HENNING, Professor of Veterinary Science, University of Pretoria. South Africa: Central News Agency. 1932. 2 vols. Pp. 405 and 469. 50*s*.

THESE volumes are confined entirely to animal diseases of economic importance, including bacterial, protozoal, and virus diseases, those due to poisonous plants, and deficiency diseases. For the greater part Prof. Henning has followed the orthodox teaching given at the laboratories for veterinary research established under the department of agriculture of the Union of South Africa at Onderstepoort. The work has indeed been produced primarily for veterinary students in South Africa, who have already studied pathology and bacteriology in detail, since familiarity with these subjects is assumed. It should also be

REVIEWS AND NOTICES OF BOOKS

Pastoral Psychiatry and Mental Health

By JOHN RATHBONE OLIVER, D.D., M.D. London: Charles Scribner's Sons. 1932. Pp. 330. 8*s.* 6*d.*

THE issue of such a book as this will not meet with universal approval among doctors. It is addressed to "persons without definite medical training and experience whose work brings them in touch with the mental illnesses and maladjustments of their fellow men," in the hope that it will help them to recognise and handle such cases. It certainly provides a fairly sound and simple account of the familiar mental disorders, their causes and treatment. It is particularly meant for clergymen, and the author's qualifications for writing it are that he is a Catholic priest as well as a practising psychiatrist. The value of religion in the prevention and treatment of mental disorder is constantly stressed. The exposition of psychiatry here is for the most part in conformity with modern teaching, and would be of assistance to the chaplain of a mental hospital or to a court missionary. Spiritual directors of the Roman Catholic church already have their manuals, here enumerated in an excellent bibliography. The author often expresses his debt to these works, most of them written by Jesuits. There is much clinical documentation throughout the book. There are two temperate chapters on sexual factors and a final chapter on religious faith and practice.

It is probable that the book will be used by many untrained social workers, attached to churches and charitable bodies, who will accept the statement on its dust-cover that it can be easily and thoroughly understood, and that it will enable them to "supply accurate scientific help to the bewildered, the mentally sick, and the profoundly maladjusted." This is certainly not a safe assumption: amateur book-learnt therapy is as risky and ineffective in psychiatry as in other branches of medicine.

The Physical Mechanism of the Human Mind

By A. C. DOUGLAS, M.D., Ch.B. Edinburgh: E. and S. Livingstone. 1932. Pp. 251. 15*s.*

THE pursuit of neurological explanations of behaviour continues to occupy the minds of observers who attempt a unification of all the data concerning living things. It is only natural that those who have been brought up on anatomy and physiology should find it irresistible to picture behaviour in terms of neural process. The growth of our knowledge of the nervous system has produced such a nicely woven fabric of neural paths, from the simple mechanisms governing digestion and the expression of emotion to the mechanism of speech itself, that it would appear sufficient to rest all explanations of behaviour upon neural mechanisms. It certainly introduces a simplicity which the logical mind desires for the sake of economy in the use of concepts. The use of concepts, however, belongs to the world of ratiocination and when we turn from logic of thought to the logic of values, whether they be moral or æsthetic, we find that the neural explanation becomes little more than a diagrammatic scheme of a process which is constantly concerned with growth as new situations are faced.

In the first half of this admirable neurological exposition the reader feels completely satisfied, but when the author enters the domain of perception, association, belief, will, and imagination, the scheme breaks down, and what was at first a translation of mind into the language of physiology becomes little more than a synopsis, a skeleton from which the essential structures have been removed. The author does not reach the first manifestations of behaviour in reflex actions, but finds the reflex actions precipitations of purposes which have become stereotyped along neural paths. The concept of Value, which so frequently appears in the last 50 pages of this book, can have no neurological counterpart. It is not that neurology is by any means mistaken in its description but that it is insufficient as an explanation. It may be methodologically sound to separate mind from body, but it is a gross elimination of the facts of experience to ignore the processes which have no physiological counterpart and which cannot be squeezed into a neurological scheme the very vocabulary of which is so frequently borrowed from the world of psychology.

Entstehung, Erkennung, und Behandlung innerer Krankheiten

I. Band. *Pathologische Physiologie.* XIVth Edition. By LUDOLF KREHL, Professor in Heidelberg. Berlin: F. C. Vogel. 1932. Pp. 716. R.M.39.60.

Prof. Krehl's momentous work has now reached its fourteenth edition. The whole field of human physiology is covered from the standpoint of variations and disorders. The processes that underlie the causation of disease and form the foundation of all diagnosis and treatment are fully discussed. Throughout the work the author's critical refusal to accept unproved hypotheses stamps him as one whose sincerity of purpose fits him to be a teacher of advanced students. He does not hesitate to express his own views with emphasis, though without dogmatism, but the opinions of others are carefully reviewed. Over 2000 references to original papers are supplied. This work on the origins of disease provides a link between physiology and clinical medicine. It may not lessen the difficulties of the practitioner in understanding and explaining the production of symptoms and signs, but it will emphasise in his mind the gaps in our knowledge, and will prevent him from drawing facile conclusions from insufficient data.

This work is a standard reference book of a kind which clears the way for the advance of medicine.

Diseases of the Skin

By the late ROBT. W. MACKENNA, M.A., M.D., B.Ch. Edin. Third edition, revised and enlarged by ROBT. M. B. MACKENNA, M.A., M.D., B.Ch. Camb., Hon. Dermatologist, Liverpool Heart Hospital and Stanley Hospital. London: Baillière, Tindall and Cox. 1933. Pp. 506. 25*s.*

WE reviewed the second edition of this now standard work six years ago; the revision and amplification of his father's work necessitated by advances in dermatology since that time have been admirably carried out by Dr. R. M. B. Mackenna. Some 50 pages have been added to the text, and the number of coloured plates and illustrations has been increased. The section on the seborrhoides and seborrhœic dermatitis (p. 189) has been rearranged according to modern ideas and to alteration of bacteriological nomenclature, and it is to be hoped that biochemical discoveries will demand further amendment of this section in a future edition, for the pityrosporon of

THE LANCET

LONDON: SATURDAY, MARCH 11, 1933

SPONTANEOUS HYPOGLYCÆMIA

THE level of the blood-sugar at any given time depends on the amount of sugar entering and leaving the blood stream, and it is maintained within normal limits principally by the action of adrenaline and insulin—the thyroid and pituitary hormones probably playing a less important part. Thus a rise of blood-sugar due to absorption of glucose from the alimentary tract, or from any other cause, will result in a secretion of insulin which will rapidly bring the blood-sugar back to normal or slightly subnormal levels, whilst a fall in blood-sugar, or increased peripheral oxidation—e.g., in active exercise—will call for liberation of more adrenaline. The action of adrenaline is to mobilise the glycogen stored in the liver, and where the functional activity of the liver is much impaired—as in severe ketosis or toxæmia, or extensive hepatic disease—there may be both an abnormally poor response to adrenaline and also delay in storing carbohydrate absorbed from the gut. Similarly, when the glycogen stores of the liver have become depleted—which readily happens in most young animals, including children—increased calls for glucose may cause a temporary breakdown of the sugar-regulating mechanism, and the result will be a moderate degree of hypoglycæmia. The reason why the breakdown is only partial, even after prolonged starvation, is that the liver obtains glycogen from sources other than carbohydrate (glyco-neogenesis), and this method of "living on capital" prevents the blood-sugar from falling too far.

It will be clear that over-secretion, or unopposed action, of insulin or adrenaline will tend to produce hypoglycæmia or hyperglycæmia respectively. The clinical features of hyperglycæmia have been familiar to physicians since the dark ages, because at a certain point excess of sugar passes into the urine, where it may be recognised by the sense of taste or by more modern tests. Hypoglycæmia, on the other hand, provides no such simple clue, and its occurrence has only been known since injection of insulin has made it possible to appreciate the symptoms. These prove to be very various, and it is evident that minor degrees of hypoglycæmia are likely to remain undiagnosed unless the clinician is on the watch for them. Amongst the commonest are sweating, incoördination, and an inexplicable sense of fear; sometimes the incoördination may be so conspicuous as to suggest alcoholic intoxication. Dr. HECTOR CAMERON[1] has pointed out that in children night terrors, nervous instability, and disturbances of sleep may sometimes be alleviated by the judicious administration of glucose, and in adults it is more than probable that the wide popularity of the cocktail before a meal is in part due to the relief of hypoglycæmia which it brings. The exhaustion of athletes, again, often responds rapidly to the administration of easily assimilable carbohydrate. Here, of course, we are dealing with more or less physiological variations; but the theoretical prediction that a pathological state of hyperinsulinism, comparable to hyperthyroidism or hyperpituitarism, would be recognised has now been justified and a number of examples have been described. Where post-mortem examination or operation has shown the condition to be due to lesions of the pancreas, these lesions have usually proved to be malignant. In other cases, however, such as the one just reported by DERICK and others,[2] an adenoma of island-of-Langerhans type was found and was removed with relief of symptoms. In our present issue, Dr. W. J. GRIFFITHS and Prof. O. L. V. DE WESSELOW record an example of what they regard as "dysinsulinism," and give reasons for thinking that the symptoms are most easily explained by new growth or diffuse hyperplasia of the islet tissue of the pancreas—in spite of an anomalous response to the glucose test-meal. These conclusions are criticised by Dr. P. J. CAMMIDGE and Dr. E. P. POULTON, who put their emphasis on the hepatic element in this and some other cases.

The reader in search of a general survey of hypoglycæmia will find it in the current issue of the *Quarterly Journal of Medicine* (p. 117), where Dr. GLADYS M. WAUCHOPE reviews the subject as a whole. She classifies it in the following categories:—

1. *Excess of insulin,* arising from therapeutic injections, tumours and hyperplasia of the pancreas, and so-called functional hyperinsulinism.
2. *Lack of opposing secretions* from disease of the suprarenal glands, pituitary tumours, and myxœdema.
3. *Lack of glycogen* owing to destruction of the reservoirs—viz., hepatic disease or wasting of muscles—abnormal excretion of sugar due to a lowered renal threshold or lactation, depletion of glycogen stores from active exercise, and failure to replenish them from starvation.
4. *Interference with the regulating centre,* as in nervous disorder affecting the pons, or overaction of the vagus.

In several of these conditions it is admittedly difficult to prove cause and effect, and the interpretation is somewhat speculative. It appears clearly that there is no blood-sugar level at which symptoms of hypoglycæmia regularly manifest themselves, and that a rapid fall in blood-sugar will produce them at a much higher level than if the fall is gradual. Indeed, chronic hypoglycæmia may be associated with very little disturbance, or may be found only on routine examination, whilst an excessive dose of insulin may produce symptoms in a diabetic if it results in a rapid fall of blood-sugar to a level that would normally be considered hyperglycæmic. It is surprising to find that WAUCHOPE gives as high a level as 0·08 to 0·07 per cent. as the usual level for the onset of clinical hypoglycæmia, although it is pointed out that the welcomed by field veterinary officers, and its easy style and interesting historical descriptions of diseases should give it a wider public among stockowners. Much of the material has hitherto been available only in journals; this applies more particularly to the filtrable virus and plant poison sections.

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[1] Brit. Med. Jour., 1930, ii., 717.

[2] Derick, C. L., Newton, F. C., Schulz, R. Z., Bowie, M. A., and Pokorny, N. A.: New Eng. Jour. Med., Feb. 9th, p. 293.

The pattern adopted for each disease is to discuss causal organism, susceptible animals, methods or suggested methods of transmission, geographical distribution in South Africa, and their symptoms, course, lesions, diagnosis, treatment, and prevention. Considerable space is devoted to prophylactic inoculation. Measures for State control are included in descriptions of "scheduled" diseases, and the reasons of their enforcement are explained. If farmers would take the trouble to read these sections they might grow more eager to coöperate with the Ministry of Agriculture. Throughout the book disease control is regarded from the point of view of the State and of the herd, very little space being allotted to the treatment of individual animals. This doctrine is in keeping with the ranching type of farming practised in South Africa. It is unfortunate that a subject of such economic importance as parasitology should have been omitted entirely. A third volume repairing this omission would be a valuable addition.

A text-book dealing with disease economically important in one country must have a message outside its range. This work is of real value in collecting and setting forth the results which have been attained by Sir Arnold Theiler and his co-workers at Onderstepoort. The section on plant poisons forms an excellent addition to the literature of a subject much neglected in veterinary works.

The Early History of the Infant Welfare Movement

By G. F. McCLEARY, M.D. Cantab., D.P.H., formerly a Deputy Senior Medical Officer, Ministry of Health; Medical Officer of Health, Battersea. London: H. K. Lewis and Co., Ltd. 1933. Pp. 176. 6s.

BROADLY speaking, the infant welfare movement came into being at about the end of the nineteenth century, and Dr. McCleary, one of the pioneers of the movement in this country, has written an illuminating account of its early history, which he divides into two periods, the first up to June, 1906, when the first conference on Infantile Mortality was held in London, and the second up to the next conference in 1908. A concluding chapter summarises the events between 1908 and 1914. Dr. McCleary wins the reader's gratitude by an admirable gift of selection; he has produced an essentially complete record without ever becoming tedious or overloading his chapters with unnecessary detail. Amongst forerunners of the infant welfare movement, William Cadogan (1711–1797) and George Armstrong, who in 1769 founded a "Dispensary for the relief of the Infant Poor," are quoted for their modern views and active work on behalf of infancy, while John Brunnell Davis (1780–1824) was the first advocate of health visiting. The great debt of child welfare to French physicians, among whom Pierre Budin will always hold first place, is well set out, as is the contribution of America towards securing a satisfactory milk-supply, the two outstanding figures in this campaign being Nathan Straus, the apostle of pasteurisation, and Henry Leber Coit, to whom the introduction of certified milk was due. Dr. McCleary was himself responsible for the first infants' milk depôt in London, opened in Battersea in 1902, when he was medical officer of health of that borough. The inception and development of a health visiting service, of schools for mothers, infant consultations, meals for nursing mothers, and other features of child welfare work make an interesting record, and the reader is introduced to an imposing gallery of pioneers—Alderman Benjamin Broadbent, Drs. A. K. Chalmers, Drew Harris, J. W. Ballantyne, J. F. J. Sykes, Sir George (then Dr.) Newman, Dr. S. G. Moore, Sir Arthur (then Dr.) Newsholme, Dr. Eric Pritchard, and others whose names are household words among child welfare workers. In his final chapter Dr. McCleary discusses the question how far the decline in infantile mortality in the period covered by his record may be attributed to the infant welfare movement, and makes out a good case for regarding this as probably the most potent, though certainly not the only, cause for the improvement achieved. A double index, one under names and the other under subjects, adds to the value of this well-written book.

British Journal of Children's Diseases

To the January–March number Dr. W. G. Wyllie and Dr. Bernard Schlesinger contribute a paper based on 80 cases on the Periodic Group of Disorders in Childhood, in which they include bilious attacks, cyclical vomiting, ketogenic or acetonæmic vomiting, recurrent pyrexial attacks, and migraine. The periodic attack is manifested clinically by a syndrome composed of vomiting, abdominal pain, headache, and fever. In some instances vertigo, rise of blood pressure, lapses of consciousness, and convulsions are observed. In a large number of cases there is a history of a similar complaint in other members of the family or in the childhood of one or other parent. The latter may suffer from biliousness or migraine in adult life. The influence of heredity is more often found on the maternal side, though in the writers' series migraine in the father was not uncommon. Asthma occurs in a considerable proportion of such families, so that the question of an allergic factor in the make-up of children suffering from the periodic group of disorders has been raised. From a study of the effects of a ketogenic diet and the results of liver function tests in normal children and subjects of the periodic syndrome the writers conclude that the primary factor underlying the occurrence of the syndrome is of nervous origin.—Dr. F. Parkes Weber and Dr. T. R. Hill relate a Case of Cerebral Obesity Due to Chronic Encephalitis Lethargica in a boy aged 11, with a description of the appearance of the brain after death, which was characteristic of long-standing cases of the disease as described by other writers.—Dr. W. M. Feldman and Dr. A. Chalmers report a Case of Complete Transposition of the Great Vessels of the Heart with a Patent Foramen Ovale, in which the points of interest during life were the variable intensity of the cyanosis which at times was very slight, the relatively slight polycythæmia, and the comparative paucity of the leucocytes.—Dr. W. J. Rutherfurd records a Case of Hereditary Knock-knee, with Recurrent Dislocation of Patella and Aplasia of Nails in Fingers and Toes. The knock-knee was not rickety but was inherited, five cases having occurred in three generations. Every affected member of the family showed aplasia of the finger- and toe-nails, but other members of the family had similar affections of the nails without the bony deformity. Hereditary aplasia of the nails though rare was mentioned by Theophrastus in the third century B.C. in his description of the Nasty Fellow.—Dr. E. W. Goodall gives an account of three cases in which an Eruption of Petechiæ Followed Attacks of Vomiting.—The abstracts from current literature are devoted to tuberculosis.—A preliminary programme of the Third International Pædiatric Congress, which will be held in London from July 20th to the 22nd, will be found in this issue.

CARRIERS OF ENTERIC

In Great Britain the abolition, with rare exceptions, of gross contamination of water-supplies has reduced morbidity and mortality from enteric fever to small proportions. But this fall in incidence has, if possible, enhanced the importance of chronic carriers who are now the chief causes of epidemic outbreaks both in the community at large and in institutions. Prof. C. H. Browning and his associates in Glasgow have therefore rendered a valuable service in undertaking to report[1] upon this problem in the light of their own researches and those of others.

Enteric carriers may be classified according to the duration of the carrier state, and also according to the route of excretion of the specific organisms. It has been shown that, in paratyphoid B infections especially, the incidence of *temporary* carriers in convalescence is high, and the report therefore lays stress on precautions against the spread of infection during the convalescent period. In some cases the carrier state may set in several months after convalescence, and its occasional intermittency is also a factor which adds to the difficulties of control; intervals of infectivity "may be separated by non-infective periods of years." Most of those who continue to excrete bacilli for six months after the acute attack will continue to do so. Those who still excrete after a year, fortunately a small proportion only, will not clear spontaneously; the carrier state becomes *chronic* or permanent. The chronic carrier after a known attack of enteric fever is sufficiently dangerous, but in the investigation of an outbreak the history of the illness at least provides a clue to a possible source of infection. More dangerous, because more elusive, is the chronic carrier who has had no known attack or whose carrier state is intermittent. The two main routes of excretion are fæcal and urinary; it is also well recognised that bone sinuses, or subcutaneous abscesses, may continue to yield pure cultures for long periods. The chronic fæcal carrier or excreter is "usually a married woman of 30 years of age or upward." Female chronic carriers exceed male carriers in the proportion of four or five to one. Children rarely become chronic carriers, but are important agents in dissemination because the attack is so often mild and atypical. Fæcal carriers, who are occasionally "mixed" carriers of *B. typhosus* and *paratyphosus*, are far the most numerous class and may be further subdivided into the biliary carrier (gall-bladder or liver and bile-ducts, or both) and the rare true intestinal carrier. Although chronic cholecystitis, usually but not always associated with gall-stones, has been found in a large proportion of fæcal carriers, cases have occurred in which the biliary system could be held blameless, the focus being strictly intestinal. Not only may gall-stones be absent but the gall-bladder may show comparatively slight naked-eye changes such as thickening of the mucosa. Histologically, the most marked change observed by the authors of the report consisted in "localised and diffuse collections of cells in the mucosa, which are mainly plasma cells and lymphocytes with scanty eosinophiles." They think there is considerable support for Garbat's view that the gall-bladder in these carriers acts as "a test-tube containing the bile medium in which the typhoid bacteria propagate without affecting the gall-bladder itself." Urinary carriers, although less numerous, are clearly more dangerous than fæcal carriers. Not only are the opportunities for spreading infection greater, but the organisms occur in large numbers in the urine and not uncommonly in pure culture. The nidus of infection appears to be "most commonly situated in the kidney or kidney pelvis." That one kidney only may be infected has been shown by means of ureteral catheterisation and the clearance of the carrier state after the removal of the unilateral lesion.

Apart from careful treatment and nursing and the provision of a high calorie diet during the acute and convalescent stages, is it possible to prevent or lessen the possibility of the patient becoming a carrier? Prophylactic inoculation diminishes the incidence of clinical attacks. When attacks do occur in the inoculated they tend to be slight, and it has been held by some that carriers after such modified attacks are less numerous. Others, however, have not been able to confirm this. General anti-enteric inoculation of any population liable to exposure is not practicable in peace-time. But the same measure applied to closed communities such as the staff and inmates of mental hospitals is not only practicable but highly desirable. Prof. Browning and his colleagues point out that although this measure be adopted the carrier must still be searched for and treated, since amongst the recently vaccinated massive infection may yet result in an epidemic. It is well known also that the protection afforded by inoculation with T.A.B. tends to wane after a year, and to secure full protection thereafter the process must be repeated. It is advised that in addition to bacteriological evidence of freedom from infection before discharge of a case from hospital, examinations should again be made six to twelve months later, compulsory powers being exercised by all authorities in order to obtain the necessary specimens from convalescents and suspects. In Scotland, under Article 13 of the Public Health (Infectious Diseases) Regulations, 1932, it is possible to notify and to remove compulsorily a carrier, subject to the certificate being renewed every three months. In England powers exist merely to prevent enteric carriers from being concerned in the preparation or handling of food or drink for human consumption. In America regulations for the control of carriers are much more comprehensive and drastic. The authors of the report consider that the existing accommodation, usually an isolation hospital, for the investigation and difference in methods of blood-sugar estimation makes it difficult to compare the results of different observations, and that the level is generally lower in childhood.

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[1] Chronic Enteric Carriers and their Treatment. By C. H. Browning, with H. L. Coulthard, R. Cruickshank, K. J. Guthrie, and R. P. Smith: Medical Research Council, Spec. Report Series No. 179. London: H.M. Stationery Office. 1933. Pp. 80. 1s. 6d.

Though certain broad generalisations are being formed it is obvious that the interpretation of the individual case of hypoglycæmia will remain largely a matter of medical polemic until the action of the hormones regulating carbohydrate metabolism is more precisely understood.

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THE PHARMACY AND POISONS BILL

CHANGES in the profession of pharmacy and in the law of poisons are projected by the Pharmacy and Poisons Bill (H.M. Stationery Office, 6*d.*) which has been introduced in the House of Lords. The report of the Departmental Committee of 1926 regretted that these two subjects were so curiously entangled in the statute-book. The new Bill seeks to simplify the law. Like its predecessor in 1931, it is based on the draft Bill appended to the 1926 report; but there are occasional new features—e.g., the proposed prohibition of the sale of any poison from an automatic machine. The 1931 Bill passed through the House of Lords in spite of opposition from Lord DAWSON OF PENN, who complained that there had been too little consultation of the medical profession, and that the control of poisons, hitherto managed with success by the Pharmaceutical Society, was being handed over to a new bureaucratic body imperfectly acquainted with the needs of medicine. In the Commons the Bill made no headway. Its successor deserves a better fate, for the existing law is full of anomalies. Last September a man was found dead on Porlock Hill in Somerset with enough arsenic in his pockets to kill 642 persons. He worked for a paint firm, and poison was easy to get. "I could not go to a chemist's and buy 5 grains of arsenic without giving a convincing explanation," said his employer; "but I can write an order for 5 hundredweight and have it delivered here in a couple of hours without having to answer a question."

The pharmacy clauses early in the new Bill give membership of the Pharmaceutical Society to registered pharmacists; it will no longer be a matter of election. Names will be removed from the register for good cause through the agency of a Statutory Committee, subject to a right of appeal to the High Court. In this part of the Bill the Privy Council remains the central authority. A registered pharmacist who retails drugs will become an "authorised seller of poisons," provided that he or another registered pharmacist is in personal control of the premises, and of each set of premises, where the retailing is carried on, and provided that the name and certificate of registration of the person in control is conspicuously exhibited. No unregistered person is to call himself "pharmaceutical chemist," "chemist and druggist," "druggist," or "pharmacist." The difficulty of thus restricting the title of "chemist," which members of the Institute of Chemistry have a right to share, is met by legislating only as to that title if used in connexion with the sale of goods by retail. The clauses about poisons, later in the Bill, propose considerable changes. As the departmental committee proposed, and in spite of Lord HEWART's suspicions of encroachment upon Parliamentary functions, the Poisons List is to be taken out of the statute-book and left to be settled by a Poisons Board of 16 or more members including representatives of the Pharmaceutical Society, the Royal Colleges of Physicians, the General Medical Council, British Medical Association, and Institute of Chemistry, as well as nominees of the Home Office, Scottish Office, and Ministries of Health and Agriculture. The Poisons List, to be prepared by the Poisons Board and confirmed by the Home Office, will be in two parts. Part I. poisons will be saleable only by "authorised sellers of poisons"; Part II. will contain those which can be sold only by such "authorised sellers" or by persons on the local authority's list, the latter list corresponding to the present list of persons locally authorised to sell poisonous preparations used for agricultural and other non-medical purposes. The Poisons Board will have a free hand; their sole statutory guidance is the suggestion that they shall restrict Part II. to articles which are in common use "for purposes other than the treatment of human ailments," and which the public should have adequate facilities to obtain.

The proposed restrictions on the sale of poisons are partly set out in the Bill and partly left to Home Office rules. Except as provided by the rules (a rather vague exception which will require vigilant scrutiny), this part of the Bill is not to interfere with the sale of articles to duly qualified doctors or to registered dentists or veterinary surgeons for professional use or with sales to approved hospitals or to research workers for use in research. Amongst other conditions, it will be unlawful to sell a poison unless its container is labelled with the name of the poison, the proportion of the poisonous ingredient to the total ingredients, the name and address of the seller, and the word "poison" *or other prescribed indication of the character of the article.* The words which we have italicised seem to be new law. Unless rules relax the requirement, a Part I. poison must not be sold to anyone unless he is either "certified in writing" (more new law) or known to the seller to be a person to whom the poison may properly be sold. The seller of the Part I. poison must not deliver it until he has entered in a book (with the purchaser's signature) the name and address of the purchaser and of the person who certifies the purchaser. These special provisions as to sale of Part I. poisons however, are not to apply to medicine supplied by duly qualified doctors, registered dentists, and registered veterinary surgeons for professional treatment. A rather complicated subclause about book entries of all prescriptions containing poisons has a saving for medicine supplied on prescription under the National Health Insurance Acts. The Bill seeks to protect the public; poisons are not to find their way too easily into the wrong hands. At the same time, Parliament must so fashion the Bill that medical practice and research are not made too difficult.

a Government commission was appointed to investigate. The work of this commission was completed last November, and its report has just been published. Much of it is a summary of observations made abroad, but the members of the commission have all the time kept in mind the bearings these observations may have on their own country. In *Nordisk Medicinsk Tidskrift* for Feb. 4th Prof. A. Lichtenstein, one of the commissioners, publishes a summary of the report, and in the same issue of the journal appears a paper by Dr. E. Abramson of Stockholm on the problem of vaccination in Sweden. It appears from Prof. Lichtenstein's summary that while vaccination legislation has been extensively revised in many countries since the Great War, there has been a general tendency to retain compulsory vaccination for children. In answer to the question: Should compulsory vaccination be retained? his commission has replied by pointing out the inefficacy of isolation alone against small-pox, and by emphasising the difficulties associated with vaccination deferred till small-pox has broken out in the neighbourhood. The commission finds that obligatory vaccination in childhood is at present the best protection against small-pox. On account of the age-distribution of post-vaccination encephalitis, the commission is in favour of early obligatory vaccination, preferably during the first year of life. In certain communities in Sweden there seems to have been a general revolt against compulsory vaccination, with legal consequences distressing for all concerned. To face this psychological problem of mass suggestion the commission urges more effective health education in connexion with vaccination. Swedish legislation of 1916 had a "conscientious objection" clause which, between 1917 and 1926, was so strictly interpreted by the authorities that they admitted only one claim. In the period 1926–1931, as many as 145 out of 406 claims under this clause were admitted. The remedy for inconsistency of this kind is popular education.

MEDICAL AND DENTAL REGISTERS

THE Medical Register for 1933 contains 56,096 names, being 492 more than last year and 14,156 more than in 1913. The numbers added during 1932 by registration in the several divisions of the United Kingdom do not differ much from the last five-year average; 19 more in England, 8 less in Scotland, 3 less in Ireland. The addition of 196 to the Colonial list is 17 in excess of the average. There is only one removal from the Register on ceasing to practise, and only six under the penal sections of the Medical Act, the average being five over a long period of years; the smallness of this number may come as a surprise to those accustomed to take their views of professional integrity from the headlines of the daily press. Removals on evidence of death (960 last year) steadily rise in number; an increase which, although a perfectly natural happening, must be borne in mind when considering replacements. Other than these figures, the introductory pages of the Register are little changed. There is a small addition to the documents in the signing of which the practitioner is asked to observe care. The six pages containing names of present and past officers and members of the Council contain not a single name of a woman, a fact that would more readily have escaped notice had it not been for recent correspondence in our columns. Colonel Norman C. King will be signing warning notices for the last time, as his well-earned retirement is nearly due. The tables showing reciprocity with British possessions and foreign countries seem to have remained unchanged and may signify a state of equilibrium; if so, it may give food for thought that among all the countries of the world Italy and Japan are the only ones who accept our medical degrees and whose medical degrees we accept in exchange. Those who have hitherto not found much use for the Register we may remind that under the Medical Act of 1858 a copy of the Register for the time being is evidence in all courts of law, and before all justices of the peace and others, that the persons specified therein are registered according to the provisions of this Act; and that the absence of the name shall be evidence, until the contrary be made to appear, that such a person is not so registered. Moreover the Register has the merit for ready reference that it is almost a single alphabetical list—with the lamentable exception of the Colonial and Foreign lists at the end, the separate publication of which, although admittedly serving no useful purpose, remains because it would require an Act of Parliament to merge them. Finally we offer tribute to the accuracy of a list whose only misprint—in a place name, detected last year—no longer appears, although, to be honest, it was deleted by death and not by correction.

The Dentists Register for 1933 contains 14,528 names, being 56 more than last year, and 1766 more than in 1922, when for the first time dentists without qualifications were included. As an inset to the Register is issued a list of dental companies and the names of directors of companies carrying on the business of dentistry.

The lists of Medical and Dental Students registered during the year 1932, published under the direction of the General Medical Council, show that 1947 medical students registered during the year, a number larger than in any year since 1920, and 322 dental students, a number larger than in any year since 1922. All three Registers are published for the General Medical Council by Messrs. Constable and Co., 10, Orange-street, London, W.C.2.

THE PRODUCTION OF QUININE

WE noted recently[1] that the amount of quinine necessary—20 g.—to give to every patient suffering from malaria throughout the world was estimated by the Health Organisation of the League of Nations as 1,387,000 kg. yearly. The question has naturally been raised whether such a demand could be met by the quinine industry. Messrs. Howards and Sons inform us that it could, as the normal sales of the 14 principal factories, excluding those of the Indian and Italian Governments, are about 500,000 kg. yearly, and it may be assumed safely that their existing plant could give an output twice as great. Moreover these factories always hold very large stocks of quinine to meet any sudden need; for a more permanent demand sufficient plant could rapidly be erected, probably within a few months, to increase their present maximum output by 50 or even 100 per cent. Huge stocks of bark are also held, while the cinchona plantations are at present collecting only about half of their possible harvest and could greatly increase their present output at short notice. There is, then, ample quinine to meet not only present needs but all that can be foreseen. No world shortage of the drug exists, but the position noted in our columns five years ago[2] still persists—that is, a shortage of quinine at a price which would make it available for general tropical use. The difficulty is wholly economic. The great mass of those who treatment of carriers involving bacteriological, radiological, urological, and operative procedures is not adequate. This is certainly true of many small fever hospitals, but several of the large institutions already possess, or can readily provide, the necessary facilities.

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[1] THE LANCET, Jan. 28th, p. 206.
[2] Ibid., 1928, i., 87.

In the treatment of the chronic fæcal carrier chemotherapy, physiotherapy, and the administration of *B. acidophilus*, with a view to changing the reaction of the intestinal flora, alike proved ineffective. Vaccine therapy, including Besredka's oral bile-vaccines, produced no better results. Where the gall-bladder is the site of infection cholecystectomy has been successful in terminating the carrier state in 75 per cent. of cases. Failures may have been due to the fact that the patients were purely intestinal carriers who cannot be detected with certainty before operation. It seems clear that just as the chronic carrier state in diphtheria is most certainly terminated by the removal of infected tonsils and adenoids, so surgical measures offer by far the best chance of success for the cure of the chronic enteric carrier. In both conditions much expenditure of time and money will be saved when this fact is generally recognised.

ANNOTATIONS

THE HUME LECTURES

In opening the review, of which we publish the conclusion this week, Mr. H. Morriston Davies said it seemed to him a fitting tribute to the memory of George Haliburton Hume that the subject matter selected for the first lecture on surgery under his name should be thoracic surgery. A contemporary of Lauder Brunton and a pupil of Syme, Hume witnessed the complete development of Listerian methods; to his knowledge obtained in this country, he added that acquired by prolonged visits abroad, notably in Berlin and Vienna. Hume was on the active staff of the Royal Infirmary, Newcastle-upon-Tyne, for 34 years, and as chairman of the staff took a prominent part in the building of the new Infirmary, being instrumental in obtaining a gift of £100,000 from Mr. John Hall and many other contributions. He was three times president of the Northern Counties Medical Society, and the esteem in which he was held was manifested by the society commemorating his name by endowing the George Haliburton Hume lectures. The interest taken by Hume in surgery and in its progress made it right, said Mr. Morriston Davies, to pause a moment to consider why the advance of chest surgery lagged so far behind the surgery of other parts of the body. The first real advance in surgical treatment was made possible by the discoveries of Lister; the terrors were in great part allayed by the introduction of antiseptics and of narcotics. Operative treatment became a practical science and advanced with rapidly increasing strides. Operations on the abdomen, on the limbs, and on the head and neck, ceased to be those only of urgent necessity.

The brain alone, other than the thorax, resisted for a time an increasingly successful response to surgical skill. Soon however the mechanical conditions of the skull and brain became understood while the thorax remained not Victorian but pre-Victorian in its imperviousness to modern methods; unresponsive to surgical skill, repaying usually by the death of the patient any efforts more heroic than those of previous decades—one might almost say centuries. The last 15 to 20 years had, however, seen a change almost incredible in its rapidity. The surgery of the chest had suddenly ceased to be a dark reproach on this science; it had become instead an illuminating example of what could be accomplished once the fundamental principles of anatomy, of physiology, and of the mechanical peculiarities of the region, in addition to the pathology of the disease, were understood.

In pulmonary tuberculosis the value of surgical treatment has long passed the experimental stage. Collapse therapy, as Mr. Morriston Davies remarks in his summing up, will save life, in many cases restoring the individual to working capacity. For many it will enable healing to take place and will shorten the period of treatment. The more drastic forms of this therapy may give individuals life and health otherwise unobtainable, but in the matter of thoracic surgery, he adds, this country is still sadly behind America, Scandinavia, and other continental countries. Only Wales and a few counties, it seems, give their tuberculous patients every modern aid in treatment, but there are indications of a rapid change. A recent meeting of the West London Medico-Chirurgical Society was given up entirely to discussing artificial pneumothorax and Dr. F. E. Saxby Willis laid down clearly the indications for its employment. The director of the Michigan State sanatorium for tuberculosis has recently given his conclusion[1] that the majority, not the minority, of cases of active pulmonary tuberculosis are suitable for collapse therapy in some form; and very striking is the allocation of two whole numbers[2] of an important French journal to the surgical treatment of pulmonary tuberculosis, one of these numbers containing an admirable summary of the work of Prof. J. Sebrechts at the Hôpital St.Jean at Bruges. The editorial committee of the journal points out that the experience of the last few years is pointing in rather a new direction. The surgeon, instead of embarking at once on a total thoracoplasty, is attempting to achieve various forms of partial collapse more strictly adapted to the particular lesion before him. At Bruges in particular Sebrechts has concentrated on the obliteration of apical cavities by apicolysis; in Davos where the technique of collapse has been brought to a high degree of efficiency by intrathoracic division of adhesions, Dr. G. Maurer never omits to emphasise the fact that every method must be considered in every case. It is no longer a question of the routine application of the method of Forlanini or the method of Sauerbruch. The Hume lecturer has given a lead in the application of means to ends in the practice of thoracic surgery.

THE SMALL-POX PROBLEM IN SWEDEN

During the last few years the problems of small-pox and vaccination have been considered in Sweden in view of the occurrence there of cases of small-pox and the doubts raised by certain untoward incidents associated with vaccination both at home and abroad. These events were the subject of comment in the Swedish Riksdag as well as in the press, and in 1930 its success, however, depends entirely on the efforts of the patient. As Mr. Mullins said, many criminals offend because they like it; some are so lazy and feeble that they like prison; some are so bored that they like crime. These people would never be cured by psychology as it is to-day.

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[1] Jour. Amer. Med. Assoc., Feb. 4th, p. 315.

[2] Arch. Méd.-Chir. de l'Appareil Respiratoire, 1932, Nos. 5 and 6.

Mr. Mullins went on to deprecate the treatment of criminals as sick people and the deletion of punishment from the penal system. He strongly believes in punishment as a deterrent, and brought forward examples to show its value to the State. He assured his audience that considering the circumstances of the time the number of criminals was astonishingly low—and was decreasing. But the suggestion that the prisons would soon be empty if the psychologists had their way was nonsense. He would like to press on with a better probation system, and the appointment of a doctor psychologist to every prison. He would take steps to ensure that those responsible for handling law-breakers had had special training in psychology as well as in law, and that the prison authorities should be allowed to make a report on every case—and even to advise the judge or magistrate as to sentence. "The task of getting these reforms," he concluded, "will be rendered more difficult by uninstructed abuse and wholesale condemnation, and also by theoretical proposals that cannot stand the test of experiment."

ANÆSTHETICS IN BRAIN SURGERY

THE discussion on anæsthesia in intracranial surgery, at the Royal Society of Medicine on March 3rd, brought out instructive differences of opinion among experts. Mr. Norman Dott, speaking from an experience of 700 cerebral operations, described his use and disuse of ether vapour by inhalation; the addition of local infiltration; rectal ether with paraldehyde; luminal and ether vapour as adjuvants, and local anæsthesia with morphia. Later he had tried avertin and ether, and his present choice was avertin and morphia. Besides conferring stillness and safety, the ideal anæsthetic for these operations must discourage bleeding. Any anæsthetic which caused swelling or congestion of the brain was to be avoided; and herein lay the first notable difference of opinion, for, whereas Mr. Dott disapproved of ether for this reason, Dr. Z. Mennell, Mr. Ryan and others claimed that, given through an endotracheal tube, ether does not increase the size or the vascularity of the brain during operation. Endotracheal nitrous oxide and oxygen, after cocainisation of the throat, was endorsed by Mr. J. Challis, and Mr. Hugh Cairns had been well pleased with the results of this procedure employed by experts in passing the tracheal tube. Mr. Cairns described the danger of tachycardia following on withdrawal of the anæsthetic from patients in whom the sympathetic control centres had been interfered with at the operation, and queried whether the anæsthesia should not be continued for many hours to give the centres time to recover. Apart from the possibility of maintaining unconsciousness after operation is over, the time question is a serious matter for the anæsthetist. Some surgeons now may require four hours or more, up to seven or eight, for removal of a cerebral tumour. The anæsthetist working with these deliberate operators, as Dr. Mennell pointed out, is confronted with problems different from those of association with the rapid type of operator, of whom the late Sir Percy Sargent was the most brilliant example. For an operation lasting from half an hour to one and a half hours, ether given through an endotracheal or endopharyngeal catheter may be a satisfactory agent to employ, and even chloroform can be used with advantage when there is great intracranial tension. But these anæsthetics are out of the question when the operation is to last the best part of a working day. None of the speakers expressed himself satisfied with local analgesics for this kind of work. The patient must be unconscious, unless he is an infant, when a local injection fortified by the distraction of a feeding bottle during operation has given Mr. Dott all that he wanted. An additional objection to novocain, pointed out by Mr. Julian Taylor, is the febrile reaction which often follows its use. Mr. Taylor was impressed with the importance of avoiding cough, and this made him apprehensive of the endotracheal tube. Mr. C. P. G. Wakeley favoured avertin with local analgesia. The good results obtained in America with light ether anæsthesia were also mentioned.

LISTER TO SHARPEY

THERE is no finality in biography; when everything has been said about a man that can be said, a fortunate accident may open up new points and lead to fresh discoveries. Such an accident has happened in the case of Lister. Mr. C. R. Rudolf has found, in the shop of a second-hand bookseller, eight long letters written by Joseph Lister to William Sharpey who had taught him physiology when he was a student at University College in London. These letters Mr. Rudolf has transcribed, annotated, and published.[1] Six of the letters are of extreme interest because they show Lister's method of working, the great care he took to be accurate in his facts, and his desire to submit to expert criticism before he made his results public. The six letters were written between November, 1857, and November, 1858, at a time when Lister was doing the original work on the early stages of inflammation and the inhibitory action of the visceral nerves which he afterwards presented at the Royal Society. It gained him the Fellowship of the Society and at the same time marked him out as a careful and accurate observer. These letters unveil the secrets of his workshop. They show him as a man full of doubts, not sure of his results and so humble-minded that he was anxious to lay all his difficulties before a teacher whom it is clear that he held in veneration. Mr. Rudolf has published with the letters the reports made by the two referees, Sir James Paget and Prof. Goodsir, to whom the finished papers were submitted before they were printed by the Royal Society. The seventh letter deals with Lister's application for the chair of surgery at Glasgow; the eighth with medical education in Scotland, when Lister shows himself an opponent to clinical examinations. They are of minor importance compared with the first six which are a real find.

COARCTATION OF THE AORTA

A FORM of congenital "heart" disease, pure coarctation of the aorta is not associated with cyanosis, and may escape detection or be otherwise diagnosed, unless the significance of certain signs is understood. Dr. William Evans[2] of the London Hospital reports 28 cases, with the post-mortem findings of 26, the other 2 patients being still alive. He rejects the unsatisfactory Bonnet classification which divided the condition into infantile and adult types, and instead makes six groups, based on the site, nature, and extent of the coarctation, and on the associated or compensatory developmental lesions, especially the state of the ductus arteriosus. In some wish to buy quinine, whether they are governments or individuals, cannot afford to buy it in adequate amount at its present cost. It follows that even if a satisfactory synthetic substitute is ever found, it cannot benefit mankind to the full unless it can be sold far more cheaply that are the cinchona alkaloids at the present time.

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[1] Brit. Jour. Surg., xx., Nos. 77 and 79.

[2] Quart. Jour. Med., January, 1933, p. 1.

A FUND FOR RESEARCH WORKERS

INFECTIVE endocarditis is one of the most hopeless diseases with which the physician can be confronted. No means at his disposal have any effect on the essential lesion in the heart, and even if the local disease is limited in its extent the patient suffers from chronic septicæmia to which eventually he succumbs. Our actual knowledge of the pathogenesis of the disease is limited, and although its manifestations are well recognised they illustrate fundamental pathological processes with which at present we are quite unable to cope. No other disease calls more urgently for organised investigation, and to this end Sir Lester Harmsworth and Mr. H. C. A. Harmsworth founded in 1924 a Research Fund in memory of Robert Lovell St. John Harmsworth, who died of infective endocarditis. The fund is administered by a board of trustees advised by a small scientific committee, consisting of Lord Horder, Dr. M. H. Gordon, and Prof. E. H. Kettle, and grants in aid of research work are made from time to time to duly accredited persons. The attention of clinical and scientific workers who are particularly interested in the problem of malignant endocarditis is drawn to the existence of this fund of which Dr. P. Seymour Price, 33, Sloane-gardens, S.W.1, is the secretary. Applications for grants should be made to Dr. Price who will give information about the conditions governing such grants, and the lines along which it is suggested that investigations might proceed.

THE ALPS FOR CHILDREN

NEARLY a year ago we announced[1] that the ancestral Buol château overlooking Davos-Dorf had been placed at the disposal of the Birmingham Children's Hospital for use as a place for convalescent treatment. The report of the hospital for the year 1932, which was presented on Monday last, contains an account of how this offer has been utilised, although the first twelve months' working is not yet complete. Groups were sent out in May, August, and December, amounting in all to 53 children, of whom 38 were still in Davos at the end of the year. Of the 15 who returned after a stay of 3 or 6 months all except one were regarded as fit for returning; the exception was a boy who was sent home for further operative treatment. Sixteen of the 53 lucky children were selected because they had not fully recovered from an attack of pneumonia, chronic bronchitis, or other chest condition; 14 were asthmatic; 5 had failed to become robust after prolonged illness; 18 were suffering from actual tuberculosis of bones, joints, glands, or skin. The children are under the care of the very competent head of the Pro-juventute Sanatorium at Davos-Platz, and Prof. L. G. Parsons or some other member of the honorary medical staff of the parent hospital visits the château at least once a quarter to discuss progress, and to determine which child should come home and which should stay longer. A staff of five nurses and a certified teacher are supplied from home. It is of course too soon to speak of anything but immediate results; the report states that the medical staff have been immensely impressed with the results and possibilities of this new department. The impression was formed by observation on the spot, in free consultation with other children's specialists for whom the château has become something of a meeting-place. The report also states that the condition of the children who have returned proves that the same benefits would not have been possible in the same period of time in England, and that in many of the cases now at Davos it is recognised that their only chance of a permanent cure will be in a prolonged stay at a high altitude. These are brave words, for which it might not be possible at the moment to give chapter and verse. But confirmatory evidence is available in the valley from the observation of children sent from Vienna for periods of a few months at a time to the rather less favourably situated hamlet of Wiesen-Filisur. Davos has a well-equipped institute for physiological research, making it specially suitable for an experiment which is being watched with sympathetic interest by all those interested in the prophylaxis of tuberculosis by the timely care of the susceptible and recently infected. While the time may be gone by when a short sojourn in the Alps was considered specific for recognised disease of the lungs, there may well be an opportunity for trying out to its logical conclusion some such scheme as the enterprise of Birmingham and the generosity of Mr. Christian Kunzle are making possible in the Davos valley.

THE LAW AND THE OFFENDER

THE vigorous movement for the scientific study of crime, though very necessary, has tended to disparage somewhat unfairly the present arrangements for dealing with offenders. This excess of zeal received a salutary correction from Mr. Claud Mullins in a lecture he gave on March 2nd to the Friends of the Institute of Medical Psychology. He admitted that the system contained several anomalies. For instance, if a man keeps a brothel or exposes his person indecently he has no right of trial by jury and cannot receive more than three months' imprisonment, but if he steals 6*d.*, sells an indecent book, or lends his motor licence to a friend, he has a right to trial by jury and is liable to a more severe sentence. If a woman who has been deserted by her husband for six years marries again, her crime must be dealt with in the same way as murder—namely, by judge and jury at assizes—but if she encourages the prostitution of her child under 16 she is dealt with at quarter sessions. On the other hand, the legal system of this country, he said, possesses two features which render it much more humane than that of most others; an offender is deemed innocent until he is proved guilty, and his past record is not admissible until he is proved guilty. It is frequently alleged that magistrates, in common with the criminal law, lay too much stress on a man's offence and too little on the man; that they make little attempt to probe into the offender's mind. Mr. Mullins would have an expert available in every prison and for special cases in the police-court, but his conviction of the paramount importance of presuming the innocence of the accused person compels him to object strongly to any kind of examination before the verdict in most cases. As he pointed out, modern psychology is better at diagnosis that at cure, and the treatment it offers is still in the experimental stage. Many people talk as if a psycho-therapeutic treatment could be poured into the patient like a dose of medicine;

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[1] THE LANCET, 1932, i., 632.

MEDICINE AND THE LAW

Cancer Treatment by Unregistered Practitioner

An inquest was concluded at Wigan on Feb. 22nd on Mrs. Thorpe, aged 55, who, after 18 months in the Radium Institute at Liverpool, was treated by an unregistered practitioner for the last four months of her life. Dr. W. E. Cooke, pathologist at Wigan and Leigh infirmaries, said that his post-mortem examination showed signs of hypostatic pneumonia in the lungs and an extensive cancerous process in the abdomen. Death was caused by heart failure due to cancer. A son of the deceased gave evidence of his mother's treatment by Mr. C. C. Abbott, described as a physio-medical practitioner. At her first visit (for which a fee of five guineas was charged) she was examined for three hours with the aid of an electrical machine. She was charged 10*s.* 6*d.* for each subsequent visit and 2*s.* 6*d.* for each bottle of medicine and each box of paste. The coroner invited Dr. Cooke's views of Mr. Abbott's formulæ for his medicines and pastes. The witness said he could not read them; the amounts of the ingredients were not stated; he found no active principle in them for the cure of cancer. Lamps supplied by Mr. Abbott to reduce swelling were ultra-violet ray electric lamps which would have no effect upon swellings. Dr. Cooke, in reply to the coroner, said he could not go so far as to say that Mr. Abbott's treatment of Mrs. Thorpe accelerated her death in any way; he thought, however, that during her last month her life would have been easier if she had been under proper medical care.

Volunteering to give evidence, Mr. Abbott said he gave the patient herbal medicine and herbal treatment for a malignant abdominal growth. He used an electronic diagnostic machine registering the vibration of the body. Medicines were put into the machine: if the machine did not reject them, they were considered suitable for the cure of the patient; if rejected, the balance of the vibration would be upset. The coroner advised the jury that the evidence had not disclosed any criminal responsibility on the part of anyone. It could not be shown that Mr. Abbott did not honestly believe in his remedy. A verdict of death from natural causes was returned.

Electronic Vibration and Meningitis

Further explanation of Mr. Abbott's method of treatment was given at an inquest at Royton, Lancashire, on a boy who had died of meningitis. According to his father, the boy had suffered from fits since he was 2½ years old. These grew worse as he grew older. After treatment by four doctors and a specialist, the boy was taken to Mr. Abbott whom the father believed to be a medical practitioner. He had treatment from Mr. Abbott about a dozen times; the bills, according to the coroner, totalled £28 16*s.* 3*d.* In answer to Mr. Abbott the father said five guineas was charged for the first visit when the boy underwent an electrical test, and a guinea was charged for each visit afterwards. The father agreed that the boy seemed to be better after Christmas. At the electrical test the boy was placed on a chair in the corner and was connected by wires to Mrs. Abbott who was called "the subject." A man named Dr. Foster took a test and said that the boy had nine different varieties of worms, including some on the brain. The coroner informed the jury that he had himself visited the premises, Mr. Abbott giving him every facility. Mrs. Abbott, the young woman described as "the subject," wore a metal disc on her forehead. An assistant knelt on the floor in front of her and passed a glass roller up and down her body. The two of them were railed in by a wire fence. Mr. Abbott was standing by a large black box which looked like an enormous wireless set. Mr. Abbott put several bottles into the box and eventually said that the bottles contained the correct medicine. Earlier in the proceedings Mr. Abbott himself gave evidence. He said he had been practising as a physio-medical practitioner for 25 years; he had previously been connected with a colliery. The initials M.H. and F.P.C., which appeared on his papers, meant Medical Herbalist and Fellow of the Physiological College. He had for some years been working on research experiments with an improvement of the diagnostic machine called Abrams Box. He did not agree with the medical committee which reported in 1924 that the claims of electronic practice had no basis in fact. He had studied the Abrams method of diagnosis and the theory of vibrations.

Mr. Arnold Pickup, an analytical and consulting chemist practising in Rochdale, spoke of his analysis of the contents of two bottles said to have been supplied by Mr. Abbott. One contained 95 per cent. of water, the other 77 per cent. The remainder of the contents consisted chiefly of extract of liquorice, a little sweetening matter and flavouring agents. In reply to Mr. Abbott, he said he found no trace of ginseng, a Chinese drug. Dr. E. P. Maitland, police surgeon, who made the post-mortem examination, expressed the view that the dead boy had not had proper medical treatment. The jury found that the boy died of meningitis, that his death was hastened by Abbott's neglect, and that Abbott had unlawfully killed the boy. The coroner, observing that this was equivalent to a verdict of manslaughter, committed Abbott for trial.

Heart Disease and Workmen's Compensation

In addition to the other cases summarised in our columns (Feb. 25th, p. 421, and March 4th, p. 489) the following decisions were discussed by Mr. W. A. Robson in a lecture at the London School of Economics on Feb. 28th. In each case the workman's dependents had claimed compensation on the ground that his death at work from heart failure had been caused by an accident arising out of his employment.

In *Davies* v. *John Vipond & Co., Ltd.* (25 B.W.C.C., 47), a workman who, except for an attack of muscular rheumatism two years previously, appeared to have enjoyed excellent health, had reached over a truck to get at a piece of coal with his pick; in doing so he had collapsed and died at once. At autopsy a large rupture had been found in the left ventricle, together with serious changes in the wall. The judge had found the death was due to the disease and not at all to the work. The Court of Appeal had supported this finding on the ground that there had been evidence to support the judge in deciding that death had not been accelerated to any material extent.

In *Walker* v. *John Brown & Co.* (25 B.W.C.C., 166) a healthy coal-getter had been pulling down coal with an iron bar and had handed it to his mate at the latter's request. After a few minutes his mate had seen the deceased lying on the ground, and the man had soon afterwards given a groan and died. The post-mortem examination had shown death to be due to syncope caused by double pneumonia of one or two days' duration, and the medical evidence was that death was accelerated by the strain of the work on an overburdened heart. The judge had carotene; vitamin D—a solution of irradiated ergosterol in olive oil; vitamin B_1—a quantity of the dry absorption product from an extract of rice bran prepared by Dr. S. L. Brug, of Java, and stored at the National Institute for Medical Research at Hampstead.

VITAMIN D

In connexion with vitamin D it is noteworthy that though calciferol shows very intensely the specific anti-rickets activity of the natural vitamin D, it has been obtained in pure form only as a product of the artificial irradiation of ergosterol, and there is no chemical evidence identifying it with the natural vitamin. An attempt is accordingly being made by Mr. R. K. Callow, D.Phil., and Mr. T. A. Webster to isolate the natural vitamin D by methods which were successful in isolating calciferol from irradiation mixtures, using material prepared by the Glaxo laboratories, in which the vitamin has been concentrated from cod-liver oil.

The recognised poisonous action of very large doses of irradiated ergosterol—enormously in excess of normal vitamin requirements—has been attributed by some to a by-product of irradiation and by others to overdosage with the active principle of the parathyroid gland secondary to stimulation of the glands by excess of the vitamin. Both of these theories have been disproved. Dr. R. B. Bourdillon and his colleagues found that the pure substance in largely excessive doses had the same toxic effects on mice as the mixed irradiation product, and Mr. Webster that certain pure esters of calciferol produce toxic effects proportional to their anti-rickets action; while Sir Henry Dale and others found that absence of the parathyroid glands makes no difference to the effects produced by gross excess of calciferol. Prof. J. C. Drummond, working at University College with Dr. Muriel Bell on disturbances of nutrition caused by excessive dosage with cod-liver oil, has obtained results suggesting that the vitamin itself, even in large amounts, has no harmful effects.

Mr. Webster, studying the fate of calciferol in the body on material supplied by British Drug Houses, Ltd., finds that it does not pass out of the system, so that its disappearance is due to destruction rather than to excretion.

Dr. Callow and Miss H. M. Bruce have found some evidence that phytic acid, which represents most of the high phosphorus content of cereals, may be the substance in cereals which Prof. E. Mellanby has found to be antagonistic to the action of vitamin D.

Human Pathology. Diagnosis and Prognosis

In the department of clinical research at University College Hospital the scope of research has been deliberately widened. Not only investigations into cardiac and vascular diseases, but studies of the kidney function and of the sympathetic nervous system in man are now being pursued, as a natural development of previous work on hypertension and cardiac asthma and on the blood circulation. A study of kidney disease is leading to a general exploration of the symptom "headache," and histamine has been used to induce this experimentally in normal persons.

Investigations of pain in an active leg muscle deprived of its blood-supply have led to the conclusion that this pain is due to purely chemical or physico-chemical stimulus developed in the muscle, and this explanation is applicable also to the anginal pain due to disease of the coronary arteries. Studies of the onset of paralysis of the limb nerves following occlusion of the blood-supply have shown that loss of sensation begins at the extremities of the limb and passes gradually up, and that the motor apparatus is generally affected in a similar ascending order. Nerves in passing from their peripheral endings to the central nervous system become more and more susceptible to lack of oxygen. This characteristic onset of ischæmic paralysis gives warning that if nerve and muscle have been exposed equally to a toxic influence, and it is found that the muscle responds to direct stimulation but not to indirect stimulation through its nerve, a conclusion that the neuromuscular junction is at fault may be incorrect; the fault may still lie in the nerve itself, its nearer parts being more paralysed than its further parts.

These observations have obvious bearing upon peripheral neuritis as it occurs in man, since the process is strikingly similar in neuritis from toxic causes to that found in simple ischæmia, and there can be little doubt that a similar explanation applies to both.

The after-histories of 1000 patients suffering from structural heart disease have been completed, and the final report upon them is now in preparation.

At Guy's Hospital Dr. E. P. Poulton and Dr. W. W. Payne, in the course of biochemical studies on rheumatoid arthritis, have obtained results which indicate that a rise in the respiratory quotient does not necessarily mean, as had been believed, an increased consumption of carbohydrate in relation to fat. This inquiry, which may have an important bearing on the action of insulin in diabetes, is being extended. Dr. A. A. Osman and Dr. H. G. Close have been studying the morbid structure of the kidney with reference to the previous clinical history in a large series of cases. Special attention is being given to the incidence and extent of kidney disease in patients dying from other causes than nephritis. Further work has been done on the incidence and prevention of scarlatina and nephritis.

A statistical study is being made of the records of the diabetic clinic at King's College Hospital, where Dr. R. D. Lawrence is working for the Council. At Manchester Dr. J. C. Bramwell and his assistants, and at Edinburgh Prof. D. Murray Lyon and Dr. A. R. Gilchrist, have been making studies of the effects of pregnancy on patients with heart disease. At Manchester special attention has been given to the indications respectively for Cæsarean section and the induction of premature labour in cardiac cases. At Edinburgh Dr. G. H. Percival has been studying the classification and treatment of the different types of dermatitis and inquiring into dermatitis due to chemical irritants.

At St. Mark's Hospital, London, Mr. W. B. Gabriel and Dr. Cuthbert Dukes, studying the after-histories of patients with rectal cancer, found that 78 per cent. of the patients survive for three years or more after the operation of perineal excision of the rectum, provided that the regional lymph glands are not affected at the time of operation. At Edinburgh Mr. D. Band is investigating the excretions of the tubercle bacilli in the urine of patients with pulmonary tuberculosis who show no clinical signs of genito-urinary involvement; he is also making a microscopical study of tuberculous kidneys removed at operations, and relating the findings to the clinical symptoms and the evidence given by pyelography.

Research into different aspects of the anæmias, nutritional problems, dental disease, and malignant disease are being carried on at many centres, and, in fact, subjects covering the whole range of medicine, surgery, and obstetrics seem to be being attacked from new points of view. The researches quoted are only samples of the clinical investigations in progress. For an account of others and of more specialised laboratory studies the report itself should be consulted.

for two years showed no beneficial effects and appeared to have a slight detrimental effect upon reproductive activity. As regards the practical application of phosphorus feeding to stock under ranching conditions, work has been carried out to find a suitable water-soluble phosphate so that the daily ration of phosphate could be given in the drinking-water. Mono-sodium phosphate is shown to give excellent results under experimental conditions, but the method has not yet been subjected to the crucial test in the hands of the farmer.

Ectoparasites.—G. A. H. Bedford has published a synoptic check-list and host-list of the ectoparasites found on South African mammals, birds, and reptilia. This list is intended to correct the errors in the previous list published in 1927 and to include the new parasites and hosts since described. The list, including references to the literature, covers 300 pages.

Poisonous plants.—C. Rimington describes the isolation and identification of the toxic principle of *Dimorphotheca spectabilis* and *Dimorphotheca zeyheri*. It is a cyanogenetic glucoside identical with linamarin or phaseolunatin. It occurs in a hitherto unreported crystalline form; therefore the glucoside is dimorphous.

A SCHOOL OF CHILD WELFARE

THE President of the French Republic (Mr. Albert Lebrun) on March 5th attended the inauguration of the Ecole de Puériculture of the Paris Faculty of Medicine. He referred in his speech to Prof. Adolphe Pinard's life-work on behalf of mothers and children, which reaches its consummation in the new building, and at the close of the proceedings he bestowed on him the insignia of Grand Officer of the Legion of Honour. Prof. Pinard, who is now in his 90th year, is, with Prof. B. Weill-Hallé, director of the school.

The Ecole de Puériculture dates from 1919. It originated with a gift of a million francs from the American Red Cross, supplemented by 550,000 francs from the League of the Children of America (Junior Red Cross). So far the buildings have cost about 19 million francs, and the total will be about 25 millions. The object is to promote the welfare of children, and so make up the wastage caused by war and reduction of the birth-rate. Though this idea is an old one, it was not developed until sometime during the late war, when a department for the protection of mothers and children was created under the ægis of Prof. Pinard. Prof. A. B. J. Marfan has extended it and these two can claim the paternity of "puericulture."

The personnel falls into two categories: (1) doctors who take a special course in the subjects; and (2) nurses or nurse-visitors who spend one or two years in residence (or living outside). Those taking a full course sit for a diploma. The building is situated in the Boulevard Brune (Paris XIVe), and the architects are to be congratulated on the simplicity of the red-brick exterior and the excellence of their plans. There is a large amphitheatre for lectures—it was here that more than 400 persons were assembled for the inauguration ceremony—well arranged and lighted; there are administrative, consultative, and X ray departments, a good diet kitchen and laboratory both elaborately supplied and fitted, and a restaurant for the pupils. A pleasing feature of the school is the resident accommodation for no less than 150 resident pupils or nurses, each having her own bed-sitting room tastefully furnished and decorated, with washing accommodation partitioned off. In addition there is to be, when the building is completed, accommodation for 20 mothers and their infants, and for 20 older children (up to the age of puberty) suffering from nutritional disorders. There will also be out-patient clinics in all branches of child welfare.

THE ROYAL SOCIETY

THE candidates recommended by the Council for election to the Royal Society include three medical men and many others who are working on subjects the development of which is essential to medical progress. Clinical medicine is honoured in the selection of Dr. Gordon M. Holmes, who has managed to combine with consultant and hospital practice the tireless pursuit of research, and has made notable contributions to our knowledge of neurology and to the anatomy of the nervous system. Prof. J. W. McLeod, professor of bacteriology at Leeds, has done important work on the respiration and nutrition of bacteria, on the hæmolysins of streptococci, and on the different strains of diphtheria bacilli. Prof. J. B. Collip, professor of biochemistry at McGill, is known chiefly for his researches on the parathyroid hormone, and on the processes by which this hormone and also insulin could be prepared for clinical use.

Mr. A. S. Parkes, D.Sc., a Foulerton Student of the Society, has investigated the physiology of reproduction and sex, and has demonstrated the properties of the œstrus-producing and other hormones. Mr. W. R. Thompson, D.Sc., superintendent of Farnham House laboratory of the Imperial Institute of Entomology, has worked on the biology and anatomy of parasitic insects, and the inter-relationship between parasites and hosts. Mr. H. King, D.Sc., of the National Institute for Medical Research, Hampstead, is distinguished for his applications of the theory and practice of organic chemistry to substances of therapeutic importance. Prof. E. J. Salisbury, D.Sc., of University College, London, has published numerous original papers on plant anatomy and physiology, and is an authority on the ecology of woodlands and the chalk. Mr. John Hammond, D.Sc., senior assistant in the Animal Nutrition Institute at Cambridge, is distinguished for researches in the physiology of reproduction and growth.

Among those less closely associated with medicine, Mr. P. M. S. Blackett, university lecturer in physics at Cambridge, already well known for his contributions to physics, has recently made a further notable advance in our knowledge[1]; Mr. R. E. B. Crompton, now 88 years of age, was a pioneer in electrical engineering; Prof. H. M. Dawson holds the chair of physical chemistry at Leeds; Mr. A. T. Doodson is associate director of Liverpool Observatory and Tidal Institute; Mr. H. J. Gough, Ph.D., is a civil engineer working at the National Physical Laboratory; Prof. J. E. Lennard-Jones holds the Plummer chair of inorganic chemistry at Cambridge; Mr. Bernard Smith, Sc.D., is a district geologist of H.M. Geological Survey; Prof. A. M. Tyndall holds the Henry Overton Wills chair of physics at Bristol; and Prof. J. H. M. Wedderburn is professor of mathematics at Princeton, New York.

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[1] See Nature, Feb. 25th, 1933, p. 286.

awarded for the employers on the ground that there had been no real evidence that any particular piece of work had caused the death. The Court of Appeal had ordered a new trial, partly to get a more explicit answer to Lord Loreburn's question, and partly because it suspected that the judge had misdirected himself by believing it necessary to connect the death with the work through a particular action or strain.

The essential difficulties of the courts, said Mr. Robson, and their conflicting decisions had been due to two causes. The first was that the law presumed an accuracy and precision in the analysis of causation which medical science was in fact unable to provide. The second was that for personal injury by accident within the meaning of the Act it was necessary that the death or injury must follow suddenly upon the event occasioning it. In *Ismay Imrie* v. *Williamson* (1908, A.C., 437) a trimmer in a liner, in an emaciated condition, had been killed by a heat-stroke in the act of raking out ashes; his dependents had been awarded compensation. On the other hand, in *Pyper* v. *Manchester Liners* (1916, 2, K.B., 691) a stoker had died of heat-stroke after complaining of the heat for four or five days, during which he had, although suffering, continued at work to relieve his mates. His injury had been held not to be by accident. When the workman had a predisposing condition, the dividing line between being gradually overcome by disease and suddenly succumbing to personal injury by accident was so fine that it was impossible to expect justice to be done in all the cases.

RESEARCH IN VETERINARY DISEASE

THE Institute of Comparative Pathology maintained by the Department of Agriculture of the Union of South Africa at Onderstepoort, Pretoria, has long been famous for the quality of the researches carried out there and for its contribution not only to veterinary education but to the solution of the practical economic problems with which farmers in South Africa are faced. In the routine department laboratory products are manufactured on a large scale for sale to farmers practically at cost price. The organisation developed by Sir Arnold Theiler is now carried on under the direction of Dr. P. J. du Toit, but in the eighteenth annual report just published[1] it is shown that his former colleagues still have the advantage of Sir Arnold Theiler's collaboration in certain researches. The report is issued in two large volumes, and contains accounts of investigations into many aspects of veterinary medicine and surgery, among which the following may be noted as of especial interest:—

Protozoal disease.—W. O. Neitz and P. J. du Toit describe a successful method of obtaining a pure infection of *Anaplasma marginale* and *centrale* free of *Theileria mutans* and *Piroplasma bigemminum* contamination for vaccine purposes. By passage of the mixed infection through the blesbok the theileria and piroplasma infections are eliminated as the blesbuck is not susceptible to these infections. The investigation has shown that buck are susceptible to anaplasmosis and this factor will influence future legislation for the stamping out of this disease.

Virus disease.—The same observers describe experiments on the use of formolised spleen virus in place of the virus-antiserum method of immunising mules against South African horse sickness. The use of formolised vaccine gives no better immunity than the older method but the cost of immunisation is reduced. The method is still in the experimental stage. With C. Jackson, Neitz is continuing investigations upon heart water. They have shown that by injecting saline-washed endothelial cells, scraped from the intima of the jugular vein of infected sheep, into normal sheep typical heart water can be set up in the recipient. Such endothelial cells contain rickettsiæ. This experiment is held to afford direct evidence that *Rickettsia ruminantium* and not some ultra-visible virus is the causal agent of heart water. With I. P. Marais, Neitz gives a summary of the history and distribution of rabies in South Africa. It is of interest that in South Africa the disease has been almost invariably transmitted by bites of members of the viveridæ family—e.g., mongoose, gennet cat—whilst dogs have very seldom been involved.

Helminthological section.—H. O. Mönnig reports further results of his investigation of the nematode parasites of wild buck and the significance of wild animals as possible reservoirs of infection of the parasites of domestic animals. One new genus of the metastrongylidæ and five new species amongst various genera are described. In the blesbuck amongst other parasites the following were found: *Cooperia pectinata* and *punctata*, *Œsophagostomum columbianum*, species of ostertagia and trichostrongylus, and *Trichuris ovis*. In the Sassaby *Hæmonchus contortus* was found. These parasites are all of considerable economic importance in domestic animals.

Mineral deficiency diseases.—A section of nearly 300 pages deals with mineral deficiency diseases published by du Toit, I. P. Malan, and numerous other workers. With the financial assistance of the Empire Marketing Board an extensive survey of the mineral deficiencies of South African pastures has been begun. The problem is being approached by soil analysis, by chemical analysis of the pasture plants, and by the estimation of the organic phosphorus content of the blood of stock grazing over the pastures in question. A preliminary survey has shown a reasonable correlation between the phosphorus content of the soil and of the pasture growing upon that soil. A considerably closer correlation has been shown to exist between the phosphorus content of the pasture and the inorganic phosphorus content of the blood of animals grazing upon it. Where discrepancies have occurred they have been easily explained. On account of the relative simplicity of the blood-phosphorus estimation this branch of the investigation is being extended widely. Blood is drawn and the protein material precipitated with trichloracetic acid. Analysis must be performed as soon as possible because of the hydrolysis organic phosphorus to inorganic during storage. Study of the mineral metabolism of sheep has shown that the effects of phosphorus deficiency follow the same general lines as deficiency in cattle as described by Sir Arnold Theiler, du Toit, and H. H. Green, in previous reports, except that in sheep fecundity appears to be unaffected. A study of wool production, on 20 sheep fed a sufficiency of phosphorus and 20 on an insufficient phosphorus diet, showed that the phosphorus-sufficiency group produced on the average 32 per cent. heavier fleeces with 16·6 per cent. greater length of staple and 13·5 per cent. greater thickness of fibre. The experiment lasted two years. The effect of feeding small doses of iodides to sheep

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[1] Union of South Africa. Eighteenth Report of the Director of Veterinary Services and Animal Industry, Onderstepoort, Pretoria, 1932.

Several of these are bad subjects; they were born in the hard period closing the war, and as yet are not good physical specimens; they are trying patients, for just as they appear to be getting fit they often relapse. Great patience on our part and theirs may be called for. There are four minor accidents and two cases of jaundice. In the infectious block there are eight cases of chicken-pox; the rash is profuse and the spots are reported to be very irritable, but life is made more tolerable for them by night and morning soakings in fairly strong pot. permang. baths.

After my visit to the sanatorium, usually I call on the headmaster to report, and I am able to say that influenza is slacking off, but that chicken-pox may be coming. At present it is confined to two houses, and I am justified, I think, in saying that it does not seem likely to spread. The position of convalescents who do not get well promptly enough to enable them to re-enter school life is discussed, and I make suggestions for a few days' leave for these lads; the value of change in "school sickness," which I regard as an entity, is very great. Then follow visits to patients in the various houses, the summons having been received by telephone whilst I was having consultations. The invalids are those who were unfit to come to my house. The houses are visited in turn, and to-day this implied half a dozen visits. As a result three boys are sent to the sanatorium, the others, suffering from colds, are sent for walks, with instructions to the various matrons to report to me later. My routine school work should be over by 11.30, and from then until lunch my practice is attended to. The necessity for method, to which I have referred, becomes clear, because the calls of the practice have, with the coöperation of partners, to be fitted in with the school duties, and they must be undertaken in keeping with the school time chart. The motor makes this possible even when some of the visits to be made may mean visiting places far apart.

THE AFTERNOON

In the afternoons, especially at those seasons when games are being played that must entail risk of accidents, I am within call, if not actually on the ground, and two beds, with hot bottles in them, are always in readiness at the sanatorium. To-day boxing competitions are being decided; it is necessary that I should be present. Accidents may happen, or a boy may be having too much punishment. We do not want a fight to a finish which may leave lasting effects on his pluck. The fight should stop before a bad defeat is registered. It happens that I am interested particularly in one competitor. He came here in September, 1931, an Anglo-Indian war baby, and so poor a specimen physically that most of his time during his first and second terms was spent in the sanatorium. There was reason to hope for better things by the summer of 1932, but the unlucky boy got pneumonia about mid-term, made slow recovery, and was not in school for the rest of the term. It seemed hopeless to expect that the life in a public school, whatever the individual care expended, would suit him, and a provisional notice of removal was discussed. He came back in September, 1932, looking better in every way; had a good bill of health—for him—throughout the term, and when weighed in January, 1933, he had put on 12 lb. since September, 1932. One morning three weeks ago he turned up and asked my approval of his boxing. I was astonished, and told him he was not fit for such a trial of endurance. He replied: "I have been training and I'm all right." He fought and beat his man. This was a lame duck: safely across and he will go forward, for a boy who can win a boxing bout is made of the right stuff.

There remain letters to be written, mostly in reply to queries from parents as to progress (medical side) of the boys, and it is now that there occurs to me a suggestion that a change of air might be useful to a boy who comes under consideration. I am told that at many public schools this sort of leave is not allowed during term, unless in extreme cases, but our Head deals sympathetically with requests from parents, if I agree that benefit will follow.

The day ends with an after-dinner visit to the sanatorium, when there is anything special to talk over with the matron of the happenings of the day, or in formulating plans for the morrow.

THE DIFFICULTY OF EPIDEMICS

I have not dealt with the most trying part of the M.O.'s school work; this occurs in times of epidemics of the infectious diseases—i.e., scarlet fever, measles, German measles, diphtheria, mumps, and chicken-pox. My way of dealing with them is as follows. To begin with I look up in THE LANCET on Friday mornings the section on the incidence of infectious diseases, and see what is happening all over the country and therefore what may happen here. Early detection and isolation of a suspected case may and does limit epidemics. I have got the housemasters, and all those in charge of the boys, to see the value of detection as early as possible; they know that it is the first 24 hours that may make all the difference to the course of an epidemic by lessening the risk of the infected boy mixing with others. One result is that for several years scarlet fever and diphtheria have been confined to the original cases. In scarlet fever, the most difficult disease here, the rash calls for early attention and boys can be seen before much risk has occurred of their infecting others. Before the arrival of the Dick and Schultz-Charlton tests we were much handicapped, for though the rash and other symptoms pointed to scarlet fever, there were links wanting in the diagnostic chain. We dare not risk an epidemic; it was a case of "wait and see," and cases were isolated for weeks which I am now quite sure were not scarlet fever. The infected house was isolated, feelings of uncertainty kept the school authorities on tenterhooks, and parents generally, when they got to know the position, wanted their boys home. The M.O. was a sorely tried man. Now all that is changed. If there is reason to think that the inmates of a house are infected the house is isolated, all the inmates are Dick-tested within 12 or 18 hours, the non-immunes are given a dose of anti-scarlet serum, the immunes return to school, and not more than a couple of days' work are lost. The patient is treated with the serum which so modifies the course of the disease that instead of six or seven weeks, he is out of the sanatorium by the end of the fourth week. If the rash is doubtful the Schultz-Charlton test settles the question.

Diphtheria is more difficult, because of the carrier whom one has got to remember, but the Schick test spares much worry. A procedure similar to that with scarlet fever is followed—isolation and testing and serum prophylactic treatment, with a wholesale swabbing of the inmates of the infected house. Cases of measles and German measles and mumps are capable of spreading infection at a very early stage, and outbreaks are not so likely to be stopped promptly. Chicken-pox is troublesome because the first case may be so slight as to escape notice. Whooping-cough can be controlled in my opinion by early use of whooping-cough vaccine, and I have found Knyvett Gordon's diagnostic test of considerable value before the typical clinical symptoms appear.

There remain for mention two serious forms of disease for which we have always to be on the watch—the mastoid and appendix cases. It is a crime if a boy complains of earache and his complaint is not reported to the M.O., and here this is well understood by all concerned. And the temperatures are always taken in what are colloquially termed "bilious attacks" with pain, and if only a slight rise is registered the case must be reported at once. Appendicitis is thus seen early and here again the blood film is often the deciding factor.

SANITARY SUPERVISION

I am responsible for the sanitary supervision of school buildings, but here my duties are practically nil, unless some particular point is brought up. All

THE DOCTOR'S DAY

"Come, tell me how you live," I cried,
"And what it is you do!"

XVIII.—THE MEDICAL OFFICER TO A PUBLIC SCHOOL

MY day usually begins the evening before, when I go through my lists of what has to be done—memoranda suggested by the past day's work—and arrange the programme for to-morrow's work. This is necessary as my school work is not a whole-time job and private practice has got to be fitted in; thus method is essential.

THE MORNING

If any cases in the school sanatorium are causing anxiety, either from what I have seen or from reports made to me, the patients are seen before breakfast. To-day there is a case of pneumonia and a case where the symptoms may point to some appendix trouble. I find the former is going on satisfactorily, and with the latter the trouble yielded to an enema. Back to breakfast and letters at 7.45. All letters which permit of the delay wait; I read the *Times* whilst feeding, and by 8.30 I am ready to see the boys who come to my house sent by the housemasters. Consultations go on until nearly 10 A.M.—naturally some days are busier than others, but to fit in with the school organisation the boys ought to have finished with me by that hour. If I have not finished by that time exeats are given, and much appreciated by the patients, who in this way escape class, wholly or partly.

The boy patients fall generally into two divisions, those who believe their condition to be more serious than it is—these come from homes where health supervision is scrupulous if not fussy; and those who would not, or would not readily complain, and whose unfitness has to be detected for them. Of genuine malingering one sees practically nothing, though I do remember that on several successive Monday mornings a hefty youth turned up at the last minute to report sick. After two or three of his visits I got suspicious as the symptoms were subjective—headaches and pains generally, and nothing to be discovered as a cause. I found that recovery always took place in time for games, so I queried the symptoms and freely expressed my doubts, adding, "Come now, what is it? I won't give you away, but you must not pull my leg. To whom are you going this period?" "The headmaster for scripture, Sir," he replied. An exeat was required to exempt him.

There are ten patients this morning. No. 1: This is a recovery from a sharp attack of influenza. He is a senior boy, a good athlete, and expects to do well in sports if he can get fit in time. I tell him that he must go slowly, if not, he will crock up and not be able to compete; and I send a chit of what I think is well within his powers to his housemaster, containing the warning that there is a risk unless those instructions are kept to. I tell the boy to follow the advice and report to me in five days' time. No. 2: This pasty-looking boy is an albuminuric—albumin averages about two degrees Esbach. He is not allowed to take part in strenuous games, or house or school "runs," but trots in his own time, as opposed to timed runs for fit boys. He is on the modified "gyms" list. With exercise kept within due limits it is my experience that these cases clear up during school life; indeed I have only known one that did not, and he was accepted for insurance as a first-class life, with a policy slightly loaded, which he has long ago cleared. No. 3, another candidate for success in sports, very anxiously assures me that he is fit—he had been suffering from influenza. I agree with him, he goes away delighted. No. 4. an "under"—i.e., being under 16—he can compete in junior sports. He is big and well developed, and has a good chance of doing well in his games if he is allowed to compete, but influenza has intervened. He watches me keenly while I percuss him, for next year he will be an "over," when the competition will be very much stronger, and his chances of immediate distinction will be gone. I can tell him he is pretty well all right and to continue to report to me. No. 5: This boy, many would think, ought not to be here, but the family tradition is "public school," and we have a reputation for dealing kindly with our lame ducks. This very lame one has got a congenital heart writ all over him—livid face, ears, and hands, clubbed fingers. His exercise is limited to easy walks and is excused fagging. Would he be better off elsewhere? He is happy, and in a quiet, unobtrusive way the boys are kind—boys can be beasts, they can also be gentlemen. No. 6: This is a case of flat-foot. He reports every fortnight—massage, special exercises, and suitable boots are producing satisfactory results, as is nearly always the case if the disability is detected early. A few years ago one of the very worst cases of flat-foot that I have seen got a place eventually in the football "XV," but our masseuse is a genius. No. 7: This was a football casualty; I removed the big toenail. The other cases need no comment.

The notes indicate the work making up an average consultation morning. There are boys of undoubted delicacy, who are under recurrent inspection; there are cases where early diagnosis is of the first importance; and there are the accident cases. In all these the school doctor has to consider the question of fitness to join in organised games, but I am not digressing into theories as to the place of games in an educational curriculum. The games are here and it is my job as a school doctor to see that the boys get the proper benefit from them and that those who participate in them run no risks.

With regard to such a case as No. 5 noted above, the question may be raised as to what, if any, standard of physical fitness is laid down before the boy is accepted as a member of the school. We have no cut-and-dried system for dealing with new boys on their arrival, finding that the safer way is not to have a medical entrance examination, which so easily becomes perfunctory. We have a paragraph on a "Medical Sheet" which is sent to parents and guardians of our entrants, asking for information about any diseases that have already been incurred and any special illness or weakness to which the boy is subject, and the special cases are dealt with. These boys are examined and a report of their condition is sent to their housemasters with instructions and advice as to the limitations under which the boy should be placed in regard to games and athletics generally. I find this plan to work satisfactorily, and under it unfitness is not suggested to the fit—a very important point. The answers to the Medical Sheet are, of course, valuable information, as we get the home doctor's evidence and advice, but the letter from the home doctor, inspired by the parental views rather than the observed facts, saying that the boy "is not equal to games," may create a difficulty when he is found to be obviously fit upon examination.

When the consultations are over I turn to my letters, and the number of these will be accidental. I receive the medical reasons why a boy has returned late from the holidays; get permission for the performance of a late circumcision, and learn details of the boy's health as observed when he was recently at home. And there are, of course, inquiries about the progress of any boy known to be ill.

Now, at 10 o'clock, a routine visit is paid to the sanatorium, our three hospital blocks of about 70 beds being grouped under that common title. There are this morning 21 boys under treatment, including the already mentioned cases of pneumonia and of suspected appendix trouble. I find them both doing well. A good proportion of the other cases are suffering from the results of influenza.

CORRESPONDENCE

EARLY DETECTION OF MALIGNANT DISEASE

To the Editor of THE LANCET

SIR,—The interesting correspondence on this subject which has been appearing in your columns centres about the possibility of the early diagnosis of cancer, and about the psychological effects of periodic special examination. I am, of course, incompetent to define the precise stage at which malignant disease can be detected, but I should have thought it obvious (*a*) that the earlier it can be detected the better for the patient, and (*b*) that periodic examinations are more likely to do this than chance or irregular examinations.

In the psychological part of this discussion naturally I feel more at home. There can be no doubt that one effective method of treating patients who suffer from dread of cancer is the definite assurance afforded by periodic examination that these fears are without foundation. But surely it would be more scientific to refer such cases to the psycho-pathological expert so that he may discover the mental cause of their fears and endeavour by treating the cause to abolish its consequence?

Your correspondents however have argued that whatever good periodic examination may do to those suffering from carcinophobia, it will do at least equal harm by suggesting such a phobia to those hitherto free from it. That seems to me bad psychology. There are great numbers of people who pay regular visits to their dentist for periodic examination and (so my wife assures me) there are among them many women who dread caries, pyorrhœa, consequent extraction, and loss of personal beauty. Can anyone suppose that this dread is seriously extended among those in whom it has not hitherto existed, by periodic dental examinations? So too the fear of death is not uncommon among certain individuals. Will it be argued that a periodic general medical examination is likely to increase the number of persons suffering from this fear?

No. At most a periodic examination will only direct fears and anxieties from an older channel towards a new one. It is their *causation* which requires treatment, not their particular *expression*. In other words, malignant (and other) disease needs to be combated by periodic surgical (and medical) examination; while at the same time the dread of any disease needs to be combated by suitable psycho-therapeutic measures.

I am, Sir, yours faithfully,
CHARLES S. MYERS.
Montagu-mansions, W., March 6th, 1933.

DICHOTOMY

To the Editor of THE LANCET

SIR,—Your anonymous correspondent, the "unwilling accomplice," has clearly demonstrated that he lacks the guts and imagination to deal with his own problems. Do the pitiful meanderings of his conscience deserve the sympathy of the still dignified profession upon which he casts an unwarrantable slur? His remedy is perfectly simple. If he would only show the door to his shady associates, he might in time acquire a decent clientele. Let me assure him that a very large majority of the general practitioners of this country would promptly show *him* the door if he dared to suggest dichotomy to them. On the other hand, better men than he have starved for causes far less worthy than the honour of the medical profession. Has he not yet learnt that it is practically impossible for a straight player to beat a four-flusher at his own game? If he really wants to observe the strict rules, let him sit tight. His turn will come, *if he can play well enough* to seize his legitimate opportunities.

His statements imply that his reputation as a dichotomist, willing or unwilling, has been noised abroad. Personally I have come into contact with a fairly extensive variety of general practitioners since the war. Amongst the many who have failed to appreciate my professional qualities after one or two consultations, there may have been some who have resented my lack of commercial enterprise! But on two occasions only, throughout the whole of this period, have I been asked, directly or indirectly, to split a fee. In each case the amount concerned was trivial; and in each case the doctor was obviously a man of straw.

By all means let us have an association of consultants; but do let us black-ball at its foundation the whole tribe of dichotomists, whether they are practising or reformed—i.e., potential. They can form their own union, stiffen each other's spines, or pick each other's pockets, and the appendices of the public, as they please. One may hope that any genuine association of consultants in process of formation will consist of those who are consultants *in the strict sense of the term*; and that it will exclude the chameleon consultant or facultative G.P., as well as those whole-time mountebanks who are pleased to adopt the title. All these versatile performers, distinguished or otherwise, have quite sufficiently fomented internecine strife during the last 15 years—to the great disadvantage of the profession and the public. We certainly cannot afford to follow *their* example: although their transient success has possibly created envy in the heart of the "unwilling accomplice." *Ne sutor supra crepidam.*—I am, Sir, yours faithfully,

Harley-street, W., March 3rd, 1933. FRANK COOK.

To the Editor of THE LANCET

SIR,—Some years ago, when you were publishing a weekly article on "The Battle of the Clubs," a friend of mine bought a practice in a town where the club system was rife. One of his patients developed intestinal obstruction and a surgeon was called in. He decided to operate, and at the consultation my friend, not without some show of reason, advanced the view that as the surgeon was taking 50 guineas from the club-patient for about an hour's work, while he himself would have to attend him for a month and find all dressings for about a penny a week, it would be a gracious act if he handed over a part of the fee. How the argument would have ended I cannot say, as the nurse broke up the consultation with the news that the patient's bowels had acted freely.

I am, Sir, yours faithfully,
Bath, March 4th, 1933. R. L. WASON.

LEITH MURRAY MEMORIAL FUND

To the Editor of THE LANCET

SIR,—A committee has been formed with the object of raising a memorial to the late Prof. H. Leith Murray.

The members of the committee—Prof. A. Leyland Robinson (Chairman), Surgeon-Commander L. S. Ashcroft, V.D., Mr. Duncan A. Campbell, Prof. W. J. Dilling, Mr. A. A. Gemmell, Mrs. Tom Temple, the buildings are thoroughly up to date, and most have been modernised or even built since the war. During the summer holidays all the drains are inspected and tested by an expert, detailed reports of each school building and house are sent to me, when any suggestions for cleaning or repairs are dealt with before beginning of term. I regularly inspect the milk-supply. Samples are taken from time to time and warnings are sent where necessary—they have seldom been necessary.

A PLEASANT LIFE

To me school work is full of interest. The boys are "decent," and one knows what a boy means when he allows that a thing is "pretty decent." They will be boys, and he who forgets this and tries to make them or regard them as anything else asks for trouble, so I don't try. If you play fair with them and follow their reasoning they respond. I have said that my job is not a whole-time one, and herein lies the saving from possible "narrowing" with its necessary sequence of limited outlook. My general work helps to strike a balance, and one is brought into contact with educated people, not a one-sided folk at a school. The general school life with its lectures, concerts, and functions affords interest and it is always possible to get a "four" when one feels like a game of bridge. My favourite amusement is shooting over dogs trained by myself. There is just enough game on my small shoot here to get a brace or two of birds in the hours I can spare on quiet afternoons.

PANEL AND CONTRACT PRACTICE

Temporary Residents

JUDGING by the figures supplied by the Ministry of Health to the distribution committee the position with regard to temporary residents has not improved in the last year. Certain industrial areas naturally send their convalescent cases into other areas to recuperate after illness, and as they will not be likely to have as many cases sent into their area for this purpose the balance on these cases is negative, so that money has to be deducted to pay for temporary residents treated outside. Working on a percentage basis it may be said that for every 10,000 insured persons on their lists certain committees pay out for the following numbers of temporary residents placed against them in the three years:

	1930.	1931.	1932.
London	54	55	56·9
Birmingham	33	31	33
Newcastle	18	41	16
Manchester	33	36	36
Liverpool	19	19	18
Average deductions for England	—	20·8	20·7

London again shows a tendency to increase its indebtedness to outside committees, although its panel strength in percentage of the whole panel is going down, being only 12·8026 in 1932, while it was 12·9748 in 1931, and 13·0797 in 1930. (The total number of insured persons is, however, slightly up, being 1·917,000 against 1·904,000 in 1931.) The deduction for London is in fact well over double that of the average for all deduction for England. With the idea of trying to obtain a more equitable position it was decided by the distribution committee to cut down the fees allowed for treatment of temporary residents in institutions and convalescent homes from 2*s.* to 1*s.* It will be generally agreed that it was quite time something was done about the position of convalescents in these homes. Patients who often do not see the doctor to the home, and are certainly not in need of medical attendance, have their cards taken from them by the appointed collector (the matron of the home, it may be), and claims for temporary resident treatment are made for each case in the home. It is not surprising therefore, on examining the temporary resident figures for places where these convalescent homes abound, to find a large addition per 10,000 of the panel. Instances of this are:

	1930.	1931.	1932.
Southport	440	447	484
Blackpool	593	501	592
Hastings	384	348	359
Isle of Wight ..	178	176	185
Average additions for England	—	18·4	19·1

It will be interesting to see what effect the reduction in payment for convalescent home cases will have on next year's deduction and addition figures for temporary residents.

Road Accidents and the Police

A decision of the Middlesex Insurance Committee on a case in which the police called an insurance practitioner in to attend one of his own patients, who had met with an accident, would seem to be entirely contrary to the agreement recently arrived at. These emergency police cases had been giving rise to difficulty. What usually happened in the past was that some well-meaning onlooker of an accident would rush off to his own doctor, who would turn out and probably do what was necessary as first-aid, only to be told by the police that they had not sent for him and would not be responsible for his fee. So far, strictly speaking, the police were correct, but a new complication arose when the police themselves called a doctor to render aid to a patient who was an insured person. They were then in the position to say to any insurance doctor who responded that he was bound, under the regulations, to attend gratuitously. The necessity for calling in a doctor for a street accident is left by the police authorities to the constable on duty, who is not encouraged to incur medical expense unless urgent treatment seems to him to be required before removal by ambulance—e.g., severe hæmorrhage or shock. The position now is that the police will pay on an agreed scale of fees if the patient cannot afford to do so. In the Middlesex case it is not stated in the report whether the injured man was in a position to pay his own doctor an emergency fee on the police scale, but it would seem clear from the agreement between the Ministry of Health and the Insurance Acts Committee that when the police call any doctor—insurance or not—to a street emergency they are responsible for the fees. Had this agreement been known to the Middlesex insurance committee they could hardly have censured a practitioner for receiving a fee in respect of a police emergency call to one of his patients.

KING EDWARD'S HOSPITAL FUND FOR LONDON.—Hospitals within 11 miles of St. Paul's desiring to participate in the grants made by this Fund for the year 1933 must make application before March 31st to the hon. secretaries of the Fund at 7, Walbrook, London, E.C.4. Applications will also be considered from convalescent homes which are situated within the above area or which, being situated outside, take a large proportion of patients from London.

hospitals—epidemic gastro-enteritis with bacteriologically negative stools—are conveyed by nurses who, under the present system, combine the duties of feeding the children and attending to them after defæcation. We maintain that no nurse who is responsible for the feeding of any patient should handle stools, whether they are considered infectious or not. The ever persistent danger of carriers amongst nurses of anything from simple coryza to virulent Klebs-Löffler bacilli spreading their infections to their charges should be excluded by *regular* and efficient examination of nurses, by routine gargling, wearing of masks when attending young infants, and by less strenuous working hours.

We are, Sir, yours faithfully,

DAVID NABARRO,
A. GORDON SIGNY.

London, W.C., March 4th, 1933.

BLOOD PRESSURE AND CANCER

To the Editor of THE LANCET

SIR,—I should be grateful for help from any readers of THE LANCET who may be in a position to supply me with definite information as to the range of blood pressure in patients suffering from cancer—more especially in the earlier stages of the disease. Recently it was suggested to me that in cancer the blood pressure may, on occasion, be found to be raised considerably above what can be regarded as normal for the age of the patient. But thus far I have not come across a reference to any statistical evidence on the subject; and I am informed that no information is at present available at the Cancer Hospital.

I am, Sir, yours faithfully,

S. MONCKTON COPEMAN.

Prince Arthur-road, N.W., March 5th, 1933.

CHLOROFORM CAPSULES

To the Editor of THE LANCET

SIR,—Some misunderstanding seems to have arisen in connexion with my remarks on the use of chloroform capsules at the meeting of the National Birthday Trust Fund noticed in THE LANCET last week.

So many users reported the difficulty of one single attendant administering the capsules and conducting the labour, that I thought it wiser at this stage to state that two people should be present, and I carefully did not state "two midwives." A second nurse attendant, or a pupil midwife, or even an intelligent relative acting under the direction of a qualified midwife, should in my opinion fill the requirements.—I am, Sir, yours faithfully,

LOUIS CARNAC RIVETT.

Harley-street, W., March 6th, 1933.

THE ADMISSION OF WOMEN TO THE G.M.C.

To the Editor of THE LANCET

SIR,—I find to my dismay that an article with photograph has appeared in the lay press, dealing with the question of my possible nomination as a candidate for the General Medical Council. I need hardly say that this was inserted without my knowledge or consent. If I should have the honour to be selected by the British Medical Association as one of their candidates for the G.M.C. election for direct representation, it would be as a member of that Association and on my record of work in it that I should stand, and if so fortunate as to be elected would serve as a representative of the whole profession and not of medical women only.

I am, Sir, yours faithfully,

CHRISTINE M. MURRELL.

Porchester-terrace, W., March 6th, 1933.

OBITUARY

EDMUND HOBHOUSE, M.D., F.R.C.P. Lond.

WE regret to record the death of Dr. Edmund Hobhouse, which occurred at Grosvenor Hill, Wimbledon, on March 2nd, in his 73rd year.

Edmund Hobhouse was born in 1860, the eldest son of the Right Rev. Bishop Edmund Hobhouse, Bishop of Nelson, N.Z., by his first wife, Mary Elizabeth, daughter of General the Hon. J. Brodrick. He was educated at Eton and New College, Oxford. At Oxford he took classical honours in 1883, and later, deciding on the medical profession, he graduated M.B., B.Ch. in 1887, his clinical work being done at St. Thomas's Hospital, and supplemented later by post-graduate courses in Berlin and Vienna. At St. Thomas's Hospital he became both assistant house surgeon and house physician, and later was for a time attached as a resident physician at the Bethlem Royal Hospital. Further postgraduate work on the continent was interrupted by a breakdown in health, and he was advised not to attempt to practise in England. For the next five or six years accordingly he practised in Colorado and on the Riviera, but in 1895 he returned to England and settled in Brighton. Here he acquired a large practice. He had taken the diploma of M.R.C.P. Lond., and was appointed physician to the Sussex County Hospital and the Alexandra Children's Hospital.

DR. EDMUND HOBHOUSE

[*Photograph by Vandyk*

At the outbreak of the European war Hobhouse, with the rank of Lieut.-Colonel R.A.M.C., T.F., was in command of the Second Southern General Hospital at Brighton, and at the end of hostilities he remained there for a further six years in consulting practice, being elected F.R.C.P. Lond. in 1901. In 1924 he retired from the Brighton practice, and served for a period as a member of the Travelling Medical Board of the Ministry of Pensions.

On the termination of these duties he retired from the profession, living first in Kensington, and finally in Wimbledon. Latterly his health began to give way, and for some time he suffered severely from attacks of obscure pain. The disability did not prevent him from taking a deep interest in the antiquarian side of medicine and cultivating his literary proclivities. He had already edited "Health Abroad," a large portion of which he wrote himself, and he contributed much useful reading to THE LANCET, especially in regard to continental literature, where his familiarity with three languages made up a valuable asset.

Dr. Hobhouse married, in 1896, Beatrice Hutton, daughter of Mr. H. E. Hutton, housemaster at Harrow, and is survived by his widow, a son, and a daughter.

Mr. R. H. Thornton, and Mr. George Leather, F.C.A.—represent the various activities with which he was associated, and they consider that the most appropriate form of memorial would be the foundation of an annual Leith Murray Prize or Scholarship in obstetrics and gynæcology at the University of Liverpool. Donations towards this object, both large and small, will be gratefully acknowledged, and contributions should be sent to Mr. George Leather, 24, North John-street, Liverpool.

I am, Sir, yours faithfully,

Liverpool, March 2nd, 1933. A. LEYLAND ROBINSON.

CHRONIC INFECTION OF THE SACRO-ILIAC JOINTS CAUSING SPONDYLITIS

To the Editor of THE LANCET

SIR,—The clinical classification of spondylitis in current use is dependent to a large extent on the changes noted in the spine in radiograms. On this basis spinal arthritis can be divided into two distinct types.

(*a*) *Spondylitis adolescens.*—Considered to be an infective or inflammatory arthritis of the spine, which attacks the young adult. A pathological condition of the sacro-iliac joints is always present, usually noted radiographically as bony ankylosis. The sedimentation-rate in these cases supports the view that infection is a cause. This group includes the Marie Strümpell, Bechterew, and ankylopoietica types, and also "poker back" and "bamboo spine."

(*b*) *Spondylosis.*—A degenerative arthritis that attacks the older patient, better known as spondylitis osteo-arthritica or "labourers' spine." The sacro-iliac joints never show any changes radiographically, and there is no abnormality of the sedimentation-rate. Unfortunately, in many cases, the changes seen in radiograms represent only the end-results of a long-standing arthritis, and are as variable as those met with in pulmonary tuberculosis.

Once the disease has become established, therapy in any form may be considered useless, although spontaneous arrest at various stages of the disease has been known to occur. Recent work at the British Red Cross clinic, however, has brought to light the following interesting facts :—

(1) All cases of spondylitis adolescens so far examined radiographically have shown in one or, more often, both sacro-iliac joints, signs of chronic infection, such as bony ankylosis.

(2) This sacro-iliac joint infection begins several years before there are any symptoms referable to the back.

(3) The onset of the infection is indicated by a definite prespondylitic syndrome consisting of attacks of wandering pains across the shoulders, down the arms and round the ribs, and finally down the legs to the knees and up to the hips. At this stage these cases are clinically diagnosed as muscular rheumatism.

(4) No spinal symptoms, such as rigidity and pain, are complained of until ankylosis of the sacro-iliac joints has begun, and often not until it is complete.

(5) The radiographic examination of the sacro-iliac joints during this prespondylitic period has revealed the early stages of infection—the stages that precede ankylosis—which, up to now, have not been detected.

These findings appear to be of considerable importance, for not only do they go to prove that the primary cause of spondylitis adolescens is an infection of the sacro-iliac joints, but also account, in many instances, for the attacks of so-called muscular rheumatism which occur in the young adult. In cases of "muscular rheumatism" which persist over a number of years without any local signs in any of the joints, a radiographic examination of the sacro-iliac synchondrosis should be made, for prognosis must necessarily be more hopeful if infection is detected at an early stage.

With regard to treatment, trephining and curetting of the sacro-iliac joints is a procedure that might be expected to do good. An alternative, less drastic form of treatment has been tried in a few cases, with encouraging results. This method consists in irradiating the whole spine, including the sacro-iliac joints, by X rays of medium wave-length.

We are, Sir, yours faithfully,

S. GILBERT SCOTT, M.R.C.S. Eng., D.M.R.E.,
Hon. Radiologist to the British Red Cross Clinic for Treatment of Rheumatism, Peto-place ;
F. C. GOLDING, M.R.C.P. Lond., M.B., Ch.M. Sydney,
Clinical Assistant to the X Ray Department of the Clinic.

CONTROL OF INFECTIONS IN CHILDREN'S WARDS

To the Editor of THE LANCET

SIR,—We are in entire agreement with practically every point raised by Dr. Spence in his letter of Feb. 25th. A great deal of work has been done on the control of the usual infections of childhood, so that we can now face with equanimity the occurrence of cases of diphtheria, scarlet fever, and measles in a children's ward. At the Children's Hospital in Great Ormond-street, after preventive inoculation, children are operated upon in surgical wards on the nasopharynx, even if a case of scarlet fever has been notified 24 hours previously. With regard to nasopharyngeal infections, a great deal of work has been done recently, particularly in connexion with hæmolytic streptococcal throats, and it is of interest to note that Dr. Bernard Schlesinger has observed a marked diminution in the spread of these infections in his Heart Home at West Wickham, by the simple expedient of alternating children in adjacent beds—placing them from head to foot. This doubtless acts by reducing the effects of droplet infection. In the suggested plans for the rebuilding of the Great Ormond-street Hospital, the arrangements are such that no ward unit will contain more than eight cots, and these will be separated by a partition into two groups of four each. The cots will be placed parallel to the windows, resulting in a similar head to foot arrangement to that at West Wickham.

Dr. Spence instances pyloric stenosis, where the prognosis between the private and hospital cases differs so considerably. We can bear this out from our own experiences. In addition we can recall cases which have been admitted for a simple surgical operation, such as radical cure for hernia or the treatment of a nævus, which have become infected in hospital before any operation has been done; the sequence of events being perhaps tonsillitis, otitis media, double mastoid, and septicæmia. These unfortunate complications, which are by no means isolated cases or confined to one or two institutions, are inherent in the present system—which obviously needs to be changed.

We are in entire agreement with Dr. Spence on the question of the nursing staff, and believe that once the difficulty of the housing of nurses can be overcome, and adequate nurses be available, no nurse should be responsible for more than one or two children. We firmly believe that dysentery in children, and therefore most probably that bugbear of all children's neonatorum, 69. No case of cholera, plague, or typhus fever was notified during the week.

The notifications of acute pneumonia (primary or influenzal) were below the expected number (based on the median value of the corresponding weeks of 1924–32) by 31 per cent. in England and Wales, and by 33 per cent. in the County of London.

The number of cases in the Infectious Hospitals of the London County Council on Feb. 28th–March 1st was as follows:—Small-pox, 56 under treatment, 1 under observation (last week 64 and 3 respectively); scarlet fever, 1556; diphtheria 1570; enteric fever, 6; measles, 286; whooping-cough, 668; puerperal fever, 22 (plus 10 babies); encephalitis lethargica, 232; poliomyelitis, 1; "other diseases," 338. At St. Margaret's Hospital there were 20 babies (plus 15 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there was no death from small-pox, 1 (1) from enteric fever, 31 (2) from measles, 1 (1) from scarlet fever, 50 (17) from whooping-cough, 29 (4) from diphtheria, 46 (7) from diarrhœa and enteritis under 2 years, and 344 (74) from influenza. The figures in parentheses are those for London itself.

No great town reported as many as 20 deaths from influenza, and only Birmingham (19) and Manchester (11) reported more than 10. Measles accounted for 4 deaths each at Hull, Liverpool, and Birmingham; whooping-cough for 3 deaths each at Liverpool, Middlesbrough, and St. Helens. Four deaths from diphtheria occurred at Acton, 3 at Manchester.

The number of stillbirths notified during the week was 256 (corresponding to a rate of 45 per 1000 total births), including 27 in London.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Housing and Slum Clearance

ON March 6th in the House of Commons the Housing (Financial Provisions) Bill was considered on Report.

Sir P. HARRIS moved an amendment providing that the houses, to be built under the guarantees, except where otherwise approved by the Minister on the recommendation of the local authority, should be provided with a fixed bath.

Mr. SHAKESPEARE (Parliamentary Secretary to the Ministry of Health) agreed that a bath was an absolute essential to a house, but said that the amendment was unnecessary. The matter could safely be left to the discretion of the Minister.

In the course of the subsequent debate Sir FRANCIS FREMANTLE and several Members urged the Minister to reconsider the matter.

Sir E. HILTON YOUNG (Minister of Health) accepted the amendment, which was agreed to.

A further amendment, moved by Mr. GREENWOOD, to provide bathrooms as well as baths was rejected.

The Report stage of the Bill was concluded.

A New Epoch in Housing

Sir E. HILTON YOUNG, in moving the third reading of the Bill, said that the Government had seized the opportunity of the fall in building costs, in the price of capital for investment of this sort, to look forward to a more fertile and more productive epoch in housing—one in which those larger forces might be brought into play which had been so long checked by the insuperable obstacles of subsidised competition. They had a second line behind private enterprise, the line of the local authorities, and their liability and duty would be still to tend the housing needs of their locality. With the present level of money, it was within the capacity of local authorities to provide houses at rents which were within a few pence of the rents fixed as ideal under the subsidy. Then there was also the building society scheme. That had never been put forward by the Government as an essential part of their housing plan, but it had been put forward as a valuable aid in the promotion of that free play of the forces of private enterprise which was, in itself, an essential part of the scheme. It was a little practical step which might have great results. They could do no finer service for housing than to secure the services of the millions available in the hands of the building societies. It would be impossible to obtain from any other source so free a supply of capital at so low a rate. It was not true to say that only three societies were prepared to work the scheme. He had been in touch with nine societies, including the biggest, with total capital assets of £150,000,000, who were prepared to operate the scheme. Referring to the committee he had appointed to carry out a review of new conditions, he said that there would be no question of replacing the direct subsidy by the indirect subsidy, which would have an even more powerful effect in discouraging private enterprise.

Dealing with the plan of campaign by which the Government were going to wage war on the slums, the right hon. gentleman said that since the second reading of this Bill they had seen a remarkable demonstration of public opinion all over the country on this subject, and it left no doubt that the resolution of the country was to press the warfare against the slums in a determined and effective manner. (Cheers.) There was a clear demand for action. It was 60 years since the first provision was made by Statute for slum clearance, and in all that period the average annual rate of persons affected by a demolition of slums had been fewer than 3000 a year. It was 14 years since a subsidy was devoted to slum clearance, and in those 14 years the total number of houses affected was no more than 15,000; some few more than 1000 a year. There had been no progress adequate to the evil. Subsidies had only succeeded in scraping the surface of the evil. The basis of the programme he was now announcing was that there could be no more delay or trifling with the problem. He proposed to call on every local authority which was a housing authority to prepare a survey of its area from the point of view of slums and to follow that survey with a programme for the abolition of the slums so revealed. A distinction would be made between those areas which could be dealt with by reconditioning and those which required the more radical remedy of clearance. It would be suggested that the programme should state the periods during which each of the areas would be dealt with. The programme would also provide that a reconditioning area, when all the effects of reconditioning were exhausted, should become a clearance area. In consequence of the provision of a time limit for the programmes, they would secure that every dweller in the slums would have the assurance that within a limited time he would obtain deliverance from the conditions in which he dwelt. There were in existence five area programmes under the Act of 1930, but they were not sufficient for the present purpose, because they were not drawn up with the special object which the Government now had in view—namely, concentration on an effort to end the slums. They were drawn up with a view to the provision of a programme for the provision of houses in general, and must therefore be replaced by a special programme such as he had referred to. The part of the Government in this campaign would be no less direct than that of the local authorities. Its first action would be the provision of the essential finance. They would set no limit to the number of houses that might be thus dealt with. Every house that was unfit for human habitation should be dealt with as quickly as possible—the quicker the better. (Cheers.) The Government would stimulate and assist the local authorities in the preparation of their surveys and programmes. That was in general the

ALARIC CHARLES BALLANCE, M.B. Oxf.

The death occurred on Feb. 20th, at his house in Hatfield, of Dr. Alaric Ballance. This untimely termination to a useful career has been a source of deep regret to many friends and patients, and indeed to all the neighbourhood, where he was well known.

Dr. Alaric Ballance was born in 1888, the only son of Sir Charles and the late Lady Ballance. He was educated at Eton, Oxford, and St. Thomas's Hospital. At Oxford he took honours in chemistry and graduated in medicine in 1914, in which year he also obtained the English double diploma. At the hospital he acted as gynæcological house surgeon and assistant in the children's surgical department, and was resident accoucheur at the outbreak of the war. He joined the navy immediately as a temporary surgeon, and served in the navy for five years with the most varied experience, in critical circumstances. Commencing with the Antwerp episode, he served at Gallipoli with the grand fleet, and his personal work during the evacuation of Cape Helles was made the subject of public and admiring comment. His experiences at this seat of the war were terrible, on one occasion every officer senior to himself in one particular unit was killed. Later he went through the Battle of Jutland, after which he volunteered to serve in the Suvla expedition, while towards the end of the war he saw further severe service at Archangel.

At the close of the war he settled at Hatfield and obtained an extensive practice, finding time also to do valuable professional public work. He was M.O.H. for the Hatfield rural district, staff surgeon to the Herts Constabulary, and vice-chairman of the East Herts Division of the B.M.A. His professional skill and work, no less than his personal character, were appreciated by a large circle, among whom his death has caused a real gap. He was one more victim to the over-strenuousness of the doctor's life in times of wide-ranging sickness. He was tired out.

Dr. Ballance married a daughter of Sir Walter Tryon, and leaves a widow and four children, the two sons being at present at Eton.

PUBLIC HEALTH SERVICES

Consultants and Specialists at L.C.C. Hospitals

Up to now consultants have in the main been engaged for individual hospitals and institutions of the London municipal service, some being paid annual salaries, others a fixed charge a visit for a minimum number of visits each year, and others a fixed charge for visits as required. On Tuesday last the London County Council approved a scheme for putting the consultant and specialist service as far as possible on a regional basis. The general hospitals have been divided into seven geographical groups with affiliated special hospitals and residential schools; and the specialists are to be available for head office purposes in connexion with the school medical and tuberculosis services, the work of medical examination of candidates, and so forth. In the future consultants will be appointed to the service and utilised as required for a group or groups of hospitals. At every hospital the services are to be available of physician, surgeon, gynæcologist, ophthalmic surgeon, ear, nose, and throat surgeon, orthopædic surgeon, dermatologist, pædiatrist, urologist, radiologist (except at Lambeth hospital), obstetrician (where there is a maternity ward), and tuberculosis officer (under appropriate circumstances). In each group the total estimated number of weekly sessions required is as follows:—

Physicians	27	Ear, nose, and throat surgeons	25
Surgeons	34	Dermatologists ..	15½
Obstetricians and gynæcologists	16½	Pædiatrists	15
Ophthalmologists ..	20	Urologists	9½
Radiologists	51	Orthopædists	11

The time required by anæsthetists and neurologists being difficult to estimate, the suggestion is that panels should be formed, and their services utilised as required, and paid for at sessional rates: anæsthetists 34*s.* and neurologists 52*s.* 6*d.* for a session of 2½ hours. Other consultants will be engaged on a basis of yearly salaries; they would work at different hospitals to each of which they would be definitely attached for a fixed number of sessions a week, undertaking in addition any emergency work. The salaries proposed are held to cover operations. The minimum period for which each consultant or specialist is appointed is normally to be two sessions a week of approximately 2½ hours each. Salaries of the part-time staff are to be fixed on the following basis:—

1 session a week	£125 a year.
2 sessions ,, ...	£200 ,,
3 ,, ,, ...	£275 ,,
4 ,, ,, ...	£350 ,,
5 ,, ,, ...	£425 ,,
6 ,, ,, ...	£500 ,,

In the event of being required to divide one session's work between two or more hospitals, the time spent in travelling from one hospital to another is to be regarded as part of the session.

With a view to the possibility in the future of full-time consultant positions in the service, certain officers at present on the hospital medical staff are to be detailed for part-time consultant work, additional staff being employed to ensure that the work at these hospitals does not suffer. The salary of a full-time consulting physician or surgeon is fixed at £1250–£50–£1500 a year (no emoluments), that of a full-time radiologist at £900–£50–£1100 a year.

The appointment of part-time consultants and specialists is to be subject to annual review. In the case of a woman, marriage shall terminate her contract of service. In view of the linking up of special hospitals with general hospitals, a number of the existing positions of consultant at the special hospitals will be discontinued; a list is given in the agenda paper of the officers whose position at present is to be retained. The new scheme is to come into force on July 1st, 1933. Notice of termination of engagement on June 30th is to be given to consultants and specialists now in the hospital service, who will be informed that the question of their re-engagement after that date will depend upon the arrangement made for the provision of a consultant service.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED FEB. 25TH, 1933

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 22 (last week 18); scarlet fever, 1564; diphtheria, 768; enteric fever, 15; *acute pneumonia* (primary or influenzal), 1436 (last three weeks 5151, 4106, 2228); puerperal fever, 33; puerperal pyrexia, 104; cerebro-spinal fever, 55; acute poliomyelitis, 6; encephalitis lethargica, 12; dysentery, 4; ophthalmia

New York had done much to check transport noise in that city; and if he would have a similar body appointed here.—Mr. Oliver Stanley replied: I have no information as to the steps taken by this committee, but I am making inquiries and will then consider whether there is any further action which could usefully be taken.

Mr. Lovat-Fraser asked the Minister of Transport how many cases of enforcement had taken place during 1932 under the regulations forbidding the use of motor-cycles which were not fitted with silencers.—Sir J. Gilmour (Home Secretary) replied: I regret that I cannot give the information asked for, as the returns made by the police for purposes of the annual return of motoring offences do not distinguish between motor-cycles and other motor vehicles in respect of noise offences.

Mr. Lovat-Fraser asked the Home Secretary if he was aware that, on the adjournment of the Committee on Traffic Noises *sine die* about three years ago, Sir Henry Maybury, the chairman, promised that the Ministry would refer the question of evolving a standard motor horn, which should be at once effective and less injurious to the health and nerves of the community, to the committee of research; and whether anything had been done with regard to this.—Mr. Oliver Stanley replied: Inquiries were made from the National Physical Laboratory, and the conclusion was reached that further expenditure on experiments directed towards the production of a standard type of motor horn was not likely to be useful in results.

Hours of Labour

Mr. Lindsay asked the Prime Minister whether the question of the reduction of hours of labour would be considered by the World Economic Conference.—Mr. MacDonald replied: As my hon. friend is probably aware, this subject has been under consideration by the International Labour Organisation, and I cannot say at present whether or in what form it may come before the World Economic Conference. It is not included in the Draft Agenda prepared by the Preparatory Committee of Exports.

Powers of Coroners

Lieut.-Colonel Moore asked the Home Secretary whether he intended introducing legislation with a view to revising the powers of coroners.—Mr. Hacking (Under Secretary for Home Affairs) replied: My right hon. friend does not contemplate any such legislation.

THURSDAY, MARCH 2ND

Census Returns

Mr. McGovern asked the Minister of Health when the completed Returns of the Census taken in 1931 would become available; and what were the reasons for the delay in the publication of the figures.—Sir E. Hilton Young replied: It is expected that publication of the County Report series for the census of England and Wales will be completed in June next. A series of subject and summary volumes will follow, the issue of which should be completed early next year. As regards the latter part of the question, I am not aware of any delay, since both the estimated rate of progress and that already realised compare favourably with the experience of previous censuses and, I am advised, of other countries.

Certified Milk

Captain McEwen asked the Minister of Health whether he was now in a position to alter the requirement of the Ministry whereby it was laid down that the date of production must be stated on the caps of all bottles of certified milk.—Sir E. Hilton Young replied: This matter has not been lost sight of, but pending decisions on certain wider questions of policy I cannot at present undertake to consider altering the relevant requirements of the Milk (Special Designations) Order, 1923.

Maternity and Child Welfare

Mr. Price asked the Minister of Health whether his attention had been drawn to the decision of the Cornwall public health committee to reduce the number of health visitors from 11 to 9, combining their work with that of inspectors of midwives; and whether, in view of the fact that he had on more than one occasion pointed out to this authority that the medical and clerical staff employed by it on the public health work of the county was insufficient and did not provide proper maternity and child welfare services, he would state what steps he intended to take.—Sir E. Hilton Young replied: I do not find that my attention has been previously drawn to this matter, but I am causing inquiries to be made of the Cornwall county council in regard to it.

Disease among Milch Cattle

Sir Gifford Fox asked the Prime Minister by what approximate date the committee which was examining the question of disease among milch cattle would issue its report.—Mr. MacDonald replied: The committee are still engaged in taking oral evidence, and in view of the large number of difficult questions embraced in their terms of reference and the important interests likely to be affected by their recommendations, I do not anticipate that they will be in a position to submit their report for some time.

Hours of Work Convention

Captain Peter Macdonald asked the Minister of Labour how many nations had now ratified the hours-of-work convention put forward by the International Labour Office.—Sir H. Betterton replied: The Washington Convention on hours of work in industrial undertakings has been ratified by 11 countries; four other countries have undertaken to ratify when others do so. The following is the list:—Washington Hours Convention ratified by: Belgium, Bulgaria, Chile, Czechoslovakia, Greece, India,[1] Lithuania, Luxemburg, Portugal, Rumania, and Spain. Ratification with conditional or delayed application: Austria, France, Italy, and Latvia.

MONDAY, MARCH 6TH

Reconditioning of Slums

Captain Cazalet asked the Minister of Health whether he was able to announce the terms of reference and composition of the departmental committee to be set up with regard to the reconditioning of slums and other matters.—Sir E. Hilton Young (Minister of Health) replied: The terms of reference to the committee will be as follows: To consider and report (*a*) what, if any, further steps are necessary or desirable to secure the maintenance of a proper standard of fitness for human habitation in working-class houses which are neither situate in an area suitable for clearance under Part I. of the Housing Act, 1930, nor suitable for demolition under Section 19 of that Act; and (*b*) what, if any, further steps are necessary or desirable to promote the supply of houses for the working classes without public charge, through the agency of public utility societies or other bodies subject to similar limitations operating in particular areas or otherwise. Lord Moyne has consented to act as chairman of the committee, and the other members will be Sir Francis Dyke Acland, M.P., Major J. W. Hills, M.P., Sir Charles Barrie, M.P., Sir Geoffrey Ellis, M.P., Sir V. Henderson, M.P., Miss F. Horsbrugh, M.P., Mr. N. K. Lindsay, M.P., Major G. Lloyd George, M.P., and Dr. J. V. Worthington, M.P.

Use of Pensions Hospitals

Mr. Donner asked the Minister of Pensions what was the policy of the Ministry with regard to utilising hospitals under their control or, alternatively, transferring patients to civil hospitals as a measure of economy.—Major Tryon replied: It is the policy of the Ministry to utilise civil hospitals in preference to duplicating existing facilities so far, but only so far, as this practice is consistent with the interests of ex-Service patients for whom the Ministry is responsible. Ministry hospitals are provided for various special types of case for which either civil institutions do not provide, or which can be more suitably dealt with in Ministry institutions. With the decline in demand for treatment some of the Ministry hospitals have necessarily had to be dispensed with, but my hon. friend may rest assured that special accommodation will continue to be provided so long as it is needed.

Mr. Donner asked the Minister of Pensions the intentions of the Ministry with regard to Maghull Hospital, near Liverpool; and whether any patients were to be transferred to any other hospitals.—Major Tryon replied: The accommodation provided at Maghull, near Liverpool, which is Crown property and has been used for the treatment of severe cases of epilepsy, has become increasingly in excess of the requirements of my Department, and the institution is required by the Board of Control who are in a position to use it more advantageously for their own cases. I have accordingly arranged for the transfer of the patients now at Maghull, along with the medical nursing staff, to Chepstow, another Ministry hospital of more suitable size where equivalent accommodation will be provided.

Mr. Donner asked if it was the case that there was no truth in the suggestions that the Minister of Pensions was trying to get all these patients out of Ministry of Pensions hospitals.

Major Tryon replied in the negative. He said that those patients were being transferred from one Ministry of Pensions hospital to another Ministry of Pensions hospital.

Mr. Hall-Cain asked the Minister of Pensions how many patients for whom he was responsible were at present being treated for war disabilities in civil hospitals in Liverpool; and what amount of accommodation existed in Mossley function of the general inspectors of the Ministry, but there was a certain weight of inertia to lift, and, therefore, he proposed to assist the local authorities in the preparation of their surveys and programmes by a flying squad of special experts from the Ministry of Health, whose function would be to stimulate initiative where such stimulation was needed and to give technical assistance and advice in the preparation of the programmes.

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[1] 60 hours not 48, applicable only to certain categories of workers.

There were ample powers under the Act of 1930 to enable the Minister to carry out this programme in consequence of the passage of this Bill, and in case of need there would be no hesitation to put those powers into force.'

Mr. **Greenwood** said that the only idea of the Bill was a return to private enterprise. The Bill contained no single constructive proposal and no word dealing directly or indirectly with slums.

The Bill was read the third time by 233 votes to 66.

Compensation for Road Accidents

In the House of Lords on Tuesday, March 7th, Lord **Danesfort** moved the second reading of the Road Traffic (Compensation for Accidents) Bill. He said that their Lordships were all agreed that there must be some remedy devised for the present intolerable state of things on the roads. Instead of the numbers of deaths and injuries being decreased they had actually increased. The difficulties in the way of the pedestrian getting compensation were very great under the existing law. Under the present Bill there was a right given to the pedestrian to claim compensation without proof of negligence on the part of the motorist, but there were two important exceptions—namely (1), where the injury was solely caused by the negligence of the person injured; and (2) where the injury was caused by the negligence of the person injured coupled with the negligence of a third person. The proviso limited the operation of the Bill to pedestrians and pedal cyclists, the claims of motorists *inter se* being met by the existing law. Clause 2 gave the right to a motorist in a case where he had to pay under the Bill, because his car had actually caused the damage, to obtain an indemnity from a third person by whose negligence the accident was really caused. Owing to the accidents on the roads the hospitals throughout the country were to-day put to enormous expense, of which they could recover under the existing law only a small part. If this Bill went into Committee he would gladly welcome any amendment that was brought forward by the hospital authorities to put the hospitals on a more favourable position than they now were. (Cheers.)

Lord **Moynihan**, in support of the Bill, suggested that the yearly toll from motor casualties now equalled the total mortality and injuries of two and a half years of the South African war. He described the unfair situation in which the medical profession was placed by this frequent occurrence of serious road accidents, and suggested that there should be a central pool established by the insurance companies, that the pool or fund thus created should be vested in a competent body, and that payments from that fund should relate only to first-aid treatment. A registered medical practitioner who rendered first-aid treatment should be paid a fee from the pool unless he was otherwise remunerated for his services. Such payment should not be regarded, as at present, as an admission of liability by the insurance company; and the medical report should be available free to the coöperating insurance company and on payment of a fee to any other insurance company. He thought that such a plan would do a great deal to remedy the disadvantages from which medical practitioners were now suffering.

The effect on the hospitals of the Road Traffic Act, Section 32 Subsection (2) was intended to be beneficial, but in actual practice it had proved to be nothing of the kind. During the year 1931 he was informed by the British Hospitals Association, on the board of which he sat, that there were 25,000 motor accidents taken to the voluntary hospitals as in-patients; that the cost to the hospitals was £225,000; that the claims received were £35,000; that was to say, that 16 per cent. of the cost of the treatment of the patients was paid after claims had been made to the insurance companies. The cost borne by the various hospitals varied from 45 per cent. at the Westminster Hospital to 81 per cent. at Guy's. Unhappily, the burden which was borne by the hospitals was chiefly borne by the smaller hospitals. In those hospitals which had over 50 beds, 37 per 100 beds per annum were taken up by motor accident cases, whereas in those hospitals which had less than 50 beds, 77 motor accident patients per 100 beds per annum were admitted. The intended benefit to hospitals under the Road Traffic Act resulted in only one-sixth of the cost being borne by any one authority outside the hospitals, and nothing whatever was done in respect of out-patient treatment which might be in itself very costly. Motor accidents caused a disturbance to the routine work of the hospitals which he thought was most objectionable. The routine of a hospital was not only concerned with the treatment of patients from the immediate neighbourhood and from very far abroad, but quiet clinical research was going on which was so important and this had to be compulsorily set aside. Further, these accidents added to the hospitals' waiting-lists. He thought there ought to be a rather different point of view in any legislation of the future on this matter. (Cheers.)

The Earl of **Halsbury** opposed the Bill, the principle of which, he said, was quite wrong.

Viscount **Buckmaster** supported the Bill.

Earl **Howe** said that he did not quite like Lord Moynihan's suggestion of a central pool, but if some sort of legislation could be introduced on the lines indicated by the noble lord, he would welcome it so as to enable the medical profession and the voluntary hospitals to get payment.

The **Lord Chancellor**, speaking personally and not as the Lord Chancellor, supported the principle of the Bill.

After further debate,

The Earl of **Plymouth**, replying for the Government, said that while there was a considerable amount of precedent for altering the principle of the law in regard to the onus of proof of negligence, in the opinion of the Government Lord, Danesfort's Bill went a great deal too far. He suggested that if the Bill was given a second reading, Lord Danesfort might be willing to move that the Bill be sent to a Select Committee, so that the whole matter might be fully examined.

Lord **Danesfort** agreed to this course, and the Bill was read a second time by 31 votes to 2.

The Bill was then referred to a Select Committee.

HOUSE OF COMMONS

WEDNESDAY, MARCH 1ST

Physical Fitness and Motor-driving Licences

Mr. **Ross Taylor** asked the Minister of Transport if, in view of the number of accidents on the roads, some of which were due to physical disability and, in particular, defective vision on the part of drivers, he would institute a system for testing the declarations in regard to physical fitness made by applicants for motor-driving licences.—Mr. **Oliver Stanley** *replied:* Under the Road Traffic Act, 1930, every applicant for a licence to drive a motor vehicle is required to make a declaration in a prescribed form as to his physical fitness, including eyesight. Any person who knowingly makes a false statement is liable to severe penalties under the Act. I have no evidence to show that false declarations are frequent and, in any case, I think it would be well to gain some rather longer experience of the operation of the provisions of the Act before coming to any conclusion as to the need for imposing further requirements in regard to physical fitness.

Abatement of Noise

Mr. **Lovat-Fraser** asked the Minister of Transport if he was aware that the noise abatement committee of

MEDICAL NEWS

University of Oxford

Mr. R. L. Vollum, D.Phil., has been reappointed demonstrator in pathology; Dr. C. G. Douglas, F.R.S., demonstrator in general metabolism; and Dr. R. S. Creed, demonstrator in physiology. All these reappointments are for four years from Oct. 1st, 1933.

An election of two members of the board of the faculty of medicine, in place of Mr. E. L. Pearce Gould and Dr. J. J. Conybeare, who have served for three successive periods and are ineligible for re-election, will be held on June 2nd. The electorate consists of all Oxford graduates who are members of convocation. Nominations must be received before May 12th.

Society of Apothecaries of London

At recent examinations the following candidates were successful:—

Surgery.—J. Burden-Cooper, Univ. Coll. Hosp.; R. P. Huggins, Westminster Hosp.; W. W. B. Kelly Wiseham, Middlesex Hosp.; and A. W. Turner, St. Mary's Hosp.

Medicine.—M. Belo-Zercovsky, London Hosp.; J. A. Bull, Univ. of Toronto; J. Burden-Cooper, Univ. Coll. Hosp.; T. R. Hornby, Univ. of Manchester; V. L. Kahan, Univ. of Cambridge and London Hosp.; W. B. Mattar, St. Mary's Hosp.; T. E. Mitchell, Guy's Hosp.; J. T. Moohalaparackel, Queens Univ., Belfast; and L. Wailer, Guy's Hosp.

Forensic Medicine.—E. H. Antoniades, Royal Colleges, Edinburgh; J. G. Q. Brown, Guy's Hosp.; J. A. Bull, Univ. of Toronto; J. Burden-Cooper, Univ. Coll. Hosp.; L. A. Freeman, London Hosp.; T. R. Hornby, Univ. of Manchester; D. Kyle, Univ. of Cambridge and St. Mary's Hosp.; E. O'C. Parsons, Univ. of Sheffield and St. Bart.'s Hosp.; and F. H. Williams, Univ. of Sheffield.

Midwifery.—J. A. Bull, Univ. of Toronto; J. B. Frumin, Guy's Hosp.; E. C. Rowlands, St. George's Hosp.; J. A. van Rooyen, St. Bart.'s Hosp.; and C. E. Wetherall, Royal Free Hospital.

The following candidates, having completed the final examination, are granted the diploma of the society entitling them to practise medicine, surgery, and midwifery: J. A. Bull, D. Kyle, W. B. Mattar, and L. Wailer.

Royal Institute of Public Health

The annual Whitsuntide conference of the institute will be held this year at Eastbourne. The inaugural meeting will take place on Tuesday, May 30th, when Lord Leverhulme will deliver a presidential address on Public Health in Relation to Industry, and the next day the sections will meet to hear the addresses of their presidents. The section of state medicine and industrial hygiene are discussing the pure milk problem (opened by Dr. E. G. Annis), the principles and practice of health education (Dr. Arthur Massey). There will also be numbers of papers, including one by Sir Thomas Oliver on industrial welfare under existing conditions. Sir Josiah Stamp is to give a special address on the economic test of the limits of public health expenditure, and Prof. S. D. Adshead will open a discussion on the housing problem. In the section of women and children Dame Louise McIlroy, the president, will speak on a maternity service for patients of moderate means, and Sir Ewan Maclean will introduce a discussion on the rôle of the midwife in a national maternity service. A group of papers on the various aspects of the study and care of exceptional children forms part of the programme of this section, and Prof. Winifred Cullis is opening a discussion on biology as a basis for teaching sex hygiene to children. In the tuberculosis section Sir Pendrill Varrier-Jones will ask the question why tuberculosis is still a problem? There will also be discussions on the rehabilitation of the tuberculous cripple (Dame Agnes Hunt), on open-air hospital schools (Sir Henry Gauvain), and a third on radiology in pulmonary tuberculosis (Dr. W. Paton Philip). Dr. Ernst Brieger, Dr. R. H. Hazemann, and Mr. T. W. te Nuyl will describe the after-care work that is being done for the tuberculous in Germany, France, and Holland. The section of pathology will be addressed by Prof. Alexander Fleming, the president, on the trend of modern research in bacteriology, and its proceedings will include discussions on the centralisation of pathological laboratory service (opened by Dr. G. W. Goodhart) and on blood transfusion (Mr. Geoffrey Keynes). The section of hydrology and climatology will hold one discussion on Sir Gilbert Walker's presidential address on the importance of airs, waters, and places, and another on the relation of soil and climate to rheumatic disease. The usual receptions and ceremonies will be held in connexion with the congress. Apart from visits of instruction to places in the locality there will be pleasant opportunities of seeing some of the beauties of the coast. Anyone who is interested is invited to join the congress. The address of the institute is 23, Queen-square, London, W.C.

Royal Faculty of Physicians and Surgeons of Glasgow

At a meeting on March 7th Dr. Andrew James Hutton and Dr. John Dunbar were admitted Fellows of Faculty.

Royal College of Surgeons of England

A series of demonstrations of specimens in the museum of the College has begun and will be continued for the next fortnight. On Monday, March 13th, and Wednesday, the 15th, Mr. E. K. Martin will demonstrate Inflammatory Diseases of the Stomach and Duodenum, and on Friday, March 17th, Inflammatory Disease of the Cæcum and Appendix. On Monday, March 20th, Mr. C. E. Shattock will show specimens illustrating diseases of the kidneys, and on Friday, March 24th, specimens illustrating diseases of the testicle. The demonstrations will be at 5 P.M., and are open to all medical practitioners.

University of London

On Monday, Tuesday, and Wednesday, March 20th–22nd, at 4.30 P.M., Sir Arnold Theiler, formerly director of veterinary education and research in the Union of South Africa, will lecture at the Royal Veterinary College, Great College-street, Camden Town, London, N.W., on the Osteodystrophic Diseases of Domesticated Animals.

Royal Microscopical Society

A meeting of this society will be held in the Hastings Hall of B.M.A. House, Tavistock-square, London, W.C., on Wednesday, March 15th, at 5 for 5.30 P.M., when Dr. R. G. Canti will give a cinematograph demonstration of living tissue cells cultivated in vitro.

Irish Medical Schools and Graduates Association

The St. Patrick's day dinner of this association will be held at the Dorchester Hotel, Park-lane, on Friday, March 17th, at 7.30 P.M. The president, Dr. T. G. Moorhead, will be in the chair.

French Congress of Therapeutics

The first Congrès français de Thérapeutique will be held in Paris from Oct. 23rd to 25th, under the presidency of Dr. Loeper, professor of therapeutics in the Faculté de Médecine of Paris. Papers will be read on parenteral treatment of gastric ulcer; the association of remedies; the treatment of colibacillosis; the adrenalines; short waves in therapeutics; and the treatment of radiodermatitis. Inquiries should be addressed to the treasurer, Dr. G. Doin, 8, place de l'Odéon, Paris VI.

Dinner to Dr. Edward F. Stephenson

On the occasion of his retirement from office as chief medical officer of the Department of Local Government and Public Health of the Irish Free State, Dr. Edward F. Stephenson was recently entertained to dinner by the members of the Society of Medical Officers of Health of Ireland, who also presented him with an illuminated address. Dr. J. A. Harbison presided, and proposed the toast of Dr. Stephenson's health. He drew attention to the part Dr. Stephenson had taken in the development of a public health service in Ireland, and his courage and modern outlook in public health problems, as well as his encouragement of the medical officers of health. In addition to the members of the Society, among others present were the Lord Mayor of Dublin, the chairman of the General Council of County Councils, and Mr. E. P. McCarron, secretary of the Department of Local Government and Public Health.

New Nurses' Homes

The Princess Royal recently opened an extension of the district nurses' home at Holbeck, Leeds, to which several new rooms and many amenities have been added.—A nurses' home has been added to the Birmingham Children's Hospital, containing a separate bedroom for each of the 120 nurses. Each of the three floors of bedrooms has its distinctive colour. One floor is chiefly for the use of the night nurses, who have their own lounge and a small tea-kitchen. A concert and dance room is provided and there are one or two sitting-rooms into which a nurse can invite her friends of either sex; they can be reserved for any required time by making previous application. The nurses raised the cost.—Greatly improved accommodation for nurses at Whiston Sanatorium, Lancashire, has just been opened. Hitherto the nurses have been badly housed. Some of the rooms were dark and ill-ventilated, there was no recreation room, four maids shared a bedroom 10 ft. by 13 ft., and there was only one bathroom. There are now three bathrooms, eight new bedrooms have been provided, nurses and maids have separate sitting-rooms, and electric light has replaced gas.

Hill Hospital.—Major TRYON replied: No patients for whom the Ministry is responsible are at present being treated in any Liverpool civil hospital for their accepted war disabilities. Patients requiring institutional treatment in Liverpool are ordinarily sent to the Ministry hospital at Mossley Hill, which has accommodation of 300 beds, of which at present 255 are occupied.

Mr. BROCKLEBANK asked the Minister of Pensions what was the present policy of the Ministry with regard to the treatment in Liverpool of men whose minds were injured by war service; and whether in any cases such men had been transferred to lunatic asylums.—Major TRYON replied: There has been no change in the policy of the Ministry with regard to the treatment in Liverpool or anywhere else "of men whose minds were injured by war service." I have no authority to detain or treat in a Ministry institution a certified case of mental unsoundness, but my own policy and that of my predecessors has been to provide suitable treatment in special institutions for all cases of mental affection for which the Ministry is responsible, so long as they are not certifiable. As a matter of fact, during the past 12 months only one case had to be transferred in the Liverpool area to a mental hospital, and that was eight months ago. Any statement, such as I believe has recently been publicly made in Liverpool to the effect that the policy of the Ministry was, in the interests of economy, to transfer men from Ministry institutions to lunatic asylums is wholly untrue and can only cause needless anxiety.

Indian Medical Council Bill

Mr. RHYS DAVIES asked the Secretary of State for India what action the Government of India proposed to take in response to the representations from the Indian Medical Association with regard to the exclusion of Indian medical licentiates from the provisions of the Medical Council Bill.—Sir S. HOARE replied: I have not heard what action the Government of India propose to take. As the hon. Member is no doubt aware, the Indian Medical Council Bill has been referred to a Select Committee of the Legislative Assembly.

TUESDAY, MARCH 7TH

Medical Opinion and Disablement Pensions

Mr. HUTCHISON asked the Minister of Pensions whether his department would adopt the principle, in cases of difference of medical opinion over attributability of a disease to the Great War, of appointing an independent medical arbitrator to be agreed on by both sides in order to allay much existing bitterness.—Major TRYON replied: I could not, I fear, adopt my hon. friend's suggestion with due regard to my responsibility to Parliament. I would, however, remind my hon. friend of the present arrangements under which medical specialists of eminence, nominated by the Presidents of the Royal Colleges of Physicians and Surgeons, are invited by me to give their independent advice upon the merits of cases of late claim for disablement which present serious doubt or difficulty on the evidence.

Cost of Assistance to Ex-Service Men

Mr. LOUIS SMITH asked the Minister of Pensions what was the present total annual expenditure on assistance to those who served in the late war and to their dependants; what amount this represented per head of those who were killed and wounded; and how such amounts compared with similar expenditure in the United States of America.—Major TRYON replied: It is not possible to obtain comparable figures for the United Kingdom and the United States of America as to the expenditure on ex-Service men of the late war. In the United States of America all public expenditure on monetary benefits and on medical and other services for all classes of ex-Service men and their dependants, whether disabled by war service or otherwise, is administered through a single Department of State—the War Veterans' Bureau. In this country, on the other hand, in addition to the benefits administered by the Ministry of Pensions and the Service Departments, ex-Service men draw benefit, frequently on specially favourable terms, under the Health and Unemployment Insurance schemes, the Contributory and other Old Age Pensions Acts, and through other agencies, but the portion of the expenditure under these heads which is attributable to ex-Service men and their dependants cannot be distinguished.

THE SERVICES

DIRECTOR-GENERAL, ARMY MEDICAL SERVICES

THE War Office announces that the appointment of Lieutenant-General Sir Harold B. Fawcus, K.C.B., C.M.G., D.S.O., D.C.L., K.H.P., Director-General, Army Medical Services, has been extended for a period of one year from Sept. 16th, 1933.

ROYAL NAVAL MEDICAL SERVICE

Surg. Lts. J. B. Patrick and J. Johnston to be Surg. Lt.-Comdrs.

Surg. Lt. W. J. M. Sadler is transferred to the Permanent List.

C. J. Mullen and P. N. Walker-Taylor to be Surg. Lts.

The following appts. are notified: Surg. Comdr. E. L. Markham to *President*, for R.N. and R.M. Recruiting Headquarters. Surg. Lt.-Comdr. C. B. Fox to *Danae*. Surg. Lts. F. W. Chippindale to *Vindictive*; G. H. Sellars to *Renown* and to *Malaya*; H. O. O'Connor and E. A. Gerrard to *Victory*, for Haslar Hospital; S. J. Savage to *Pembroke*, for R.N.B., Chatham; and A. J. A. Gray to *Victory*, for R.N.B., Portsmouth.

ROYAL ARMY MEDICAL CORPS

Maj. W. H. Cornelius, half-pay list, is restd. to the estabt.

Lt. J. Taylor relinquishes his temp. commn.

G. L. McLeod to be Lt. (on prob.).

ARMY DENTAL CORPS

Lt.-Col. D. Blair, having attained the age for compulsory retirement, is placed on retd. pay.

Maj. A. R. Inglis to be Lt.-Col.

TERRITORIAL ARMY

Capt. W. W. MacNaught to be Maj.

Lt.-Col. W. H. Fisher, having attained the age limit, retires and retains his rank, with permission to wear the prescribed uniform.

Capt. G. W. Elkington resigns his commn.

INDIAN MEDICAL SERVICE

The undermentioned appts. are made: Capt. C. V. D. Rose, from R.A.M.C., to be Capt. B. A. Porritt, M. S. Purvis, F. W. Whiteman (and remains secd.), and M. E. Kirwan to be Lts. (on prob.).

ROYAL AIR FORCE

Flight Lt. M. T. O'Reilly is granted a permanent commission in this rank.

Wing Commander P. M. Keane is placed on the retired list.

COLONIAL MEDICAL SERVICE

Dr. A. W. H. Donaldson has been appointed Medical Officer in charge of the Medical Department, Somaliland; Dr. J. M. Gray, Health Officer, Hong-Kong; and Dr. H. North has been promoted to Senior Medical Officer, Nigeria.

INCOME OF PATIENTS AT GUY'S HOSPITAL.—At the end of 1931 the court of committees at Guy's Hospital authorised an inquiry into the means of in-patients, and their assessment on the main lines of the assessment in force in the local London County Council hospitals. Patients were to be informed that if they had been admitted to an L.C.C. hospital they would have been charged the amount of their assessment, and it was suggested that they might, if they wished, contribute an amount not less than they might have had to pay in an L.C.C. hospital. The analysis shows that the income of 95 per cent. of the 8232 patients interviewed in the wards was within the Hospital Savings Association limits—viz., £4 per week for a single person, £5 for a married couple without children, and £6 per week for a married couple with children—and of these 28½ per cent. had incomes up to £2 per week. These figures are held to refute the suggestion sometimes made that the poor have to go to L.C.C. hospitals because the voluntary hospitals are being utilised to a much greater extent for the lower *middle classes. As a result* of the assessment the actual contributions from patients in the wards have increased very little, but the contributions by the Hospital Savings Association have risen by over £2300. The more careful investigation into the means of in-patients has also produced contributions from provincial contributory schemes and public authorities, which show an increase of £1360 over 1931. The small additional charges made to out-patients since last April have resulted in an increase of £2350 over the amount received from out-patients in 1931. One effect of these charges has been to stimulate the production of vouchers from the Hospital Savings Association. Another effect is a 10 per cent. decrease in dispensary attendances. This is attributed to the fact that patients suffering from trivial complaints are now tending to avail themselves either of the services of their panel doctors, or are doing trifling dressings and treatment at home. The total receipts from in-patients and out-patients for 1932 amount to £39,887, and show an increase of £6700 over the total receipts of 1931.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, March 14th.—5 P.M., THERAPEUTICS AND PHARMACOLOGY. Short communications will be read by Dr. R. D. Lawrence and Dr. W. W. Payne. 8.30 P.M., PSYCHIATRY. Papers. Dr. E. A. Bennet and Dr. J. A. Hadfield: The Psychopathology of Sexual Perversions.

THURSDAY.—5 P.M., DERMATOLOGY. (Cases at 4 P.M.) Case. Dr. A. Cambell: 1. Unusual Case of Arsenical Dermatitis. Dr. Barber: 2. Case for Diagnosis. Dr. Sibley: 3. Pustular Psoriasis. Other cases will be shown. 8.30 P.M., NEUROLOGY AND PHYSICAL MEDICINE. Special Discussion. The Causation and Treatment of Interstitial Neuritis. Openers: Dr. Wilfred Harris and Dr. J. Purdon Martin, Neurology; Dr. M. B. Ray and Dr. J. Barnes Burt, Physical Medicine. Other speakers will take part.

FRIDAY.—8.15 P.M., OBSTETRICS AND GYNÆCOLOGY. Short communication. Mr. G. F. Gibberd: A Case of Concealed Accidental Hæmorrhage Associated with Spontaneous Complete Rupture of the Uterus. Papers. Mr. L. Carnac Rivett: Puerperal Sepsis—Reports of Cases at Queen Charlotte's Hospital. Mr. Carlton Oldfield and Mr. L. N. Pyrah: Some Observations on the Pathology, Diagnosis, and Treatment of Puerperal Peritonitis. 8.30 P.M., RADIOLOGY. Paper. Dr. R. E. Roberts and Mr. R. Watson Jones: Calcification and Ossification. Mr. Duncan Fitzwilliams and others will take part in the subsequent discussion. Members of the Section of Orthopædics are specially invited to attend the Meeting.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, March 13th.—8.30 P.M., Discussion on Chronic Pancreatitis to be introduced by Mr. A. J. Walton, Sir W. H. Willcox. and Prof. E. C. Dodds.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

THURSDAY, March 16th.—8.15 P.M. (at the Royal Army Medical College, Grosvenor-road, Millbank). The following amongst others will give Demonstrations:—Dr. Mary Andrews, Dr. G. M. Findlay, Drs. E. Hindle and Bruce White, Mr. B. Jobling, Dr. P. D. Johnson, Colonel Clayton Lane, Dr. G. Carmichael Low, Dr. R. D. Mackenzie, Colonel H. Marrian Perry, and Major H. J. Benstead, Mr. J. S. Steward, Prof. J. Gordon Thomson, and Prof. Warrington Yorke.

PADDINGTON MEDICAL SOCIETY.

TUESDAY, March 14th.—9 P.M. (at the Great Western Royal Hotel, Paddington), Mr. Leonard Phillips: The Place of the General Practitioner in the Practice of Midwifery.

NORTH LONDON MEDICAL AND CHIRURGICAL SOCIETY.

TUESDAY, March 14th.—9 P.M. (at St. Mary Islington Hospital), Dr. H. S. Burnell-Jones, Dr. Buckley Sharp, and Dr. Malcolm Manson: General, Special, and Public Practice.

BIOCHEMICAL SOCIETY.

FRIDAY, March 17th.—2.30 P.M. (at University College, Gower-street, London), Annual General Meeting. Communications.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

TUESDAY, March 14th.—5 P.M., Dr. Charles Newman: The Physiology of the Gall-bladder and its Functional Abnormalities. (Last Goulstonian lecture.)

THURSDAY.—5 P.M., Dr. Charles R. Box: On Complications of Specific Fevers. (First Lumleian lecture.)

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn-fields, W.C.

MONDAY, March 13th, and following WEDNESDAY and FRIDAY.—5 P.M., Mr. E. K. Martin: Museum demonstrations of Inflammatory Conditions of Stomach, Duodenum, Cæcum, and Appendix.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, March 13th, to SATURDAY, March 18th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square. Tues., 4 P.M., Practical Problems in Medicine and Surgery. Lecture by Dr. Philip Ellman, on Recent Advances in Diagnosis and Treatment of Chronic Diseases of the Chest. (Free to Members and Associates of the Fellowship of Medicine.)—NATIONAL
TEMPERANCE HOSPITAL, [illegible] N.W.
Evening M.R.C.P. Course. [illegible] .—
ROYAL WATERLOO HOS[illegible] .E.
Post-graduate Course i[illegible] nd
Gynæcology. All day.—[illegible] HO-
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and Thurs., at 8.30 P.M.—B[illegible] Beckenham, Kent.
Monk's Orchard, Eden Park, Beckenham, Kent. Course in Psychological Medicine. Tues. and Fri., at 11 A.M.—WEST END HOSPITAL FOR NERVOUS DISEASES, 73, Welbeck-street, W. Post-graduate Course in Neurology. Daily at 5 P.M.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.

MONDAY, March 13th.—10 A.M., Medical Wards, Skin Clinic. 11 A.M., Surgical Wards. 2 P.M., Surgical Wards, Gynæcological and Eye Clinics. 4 P.M., Lecture: Dr. Burnford: Febrile States.

TUESDAY.—10 A.M., Medical Wards. 11 A.M., Surgical Demonstration. 2 P.M., Throat Clinic. 4.15 P.M., Lecture: Mr. Roche: Growths of the Testicle.

WEDNESDAY.—10 A.M., Medical Wards, Children's Clinic. 2 P.M., Eye Clinic. 3.45 P.M., Venereal Diseases.

THURSDAY.—10 A.M., Neurological Clinic. 11.30 A.M., Fracture Demonstration. 2 P.M., Eye and Genito-urinary Clinics. 4.15 P.M., Lecture: Mr. Sinclair: Swellings in the Breast.

FRIDAY.—10 A.M., Skin Clinic. 12 noon, Lecture on Treatment. 2 P.M., Throat Clinic. 4.15 P.M., Lecture: Dr. Ironside: Diseases of the Nervous System.

SATURDAY.—10 A.M., Medical Wards, Children's Clinic. Surgical Wards. The lectures at 4.15 P.M. are open to all Medical Practitioners without fee.

DAILY.—2 P.M., Operations, Medical and Surgical Out-patients.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, March 17th.—4 P.M., Mr. C. Gill-Carey: Diagnosis of Sinusitis.

ST. PETER'S HOSPITAL FOR STONE, Henrietta-street, W.C.

WEDNESDAY, March 15th.—3 P.M., Mr. J. A. Andrews: Carcinoma of Prostate.

ST. MARK'S HOSPITAL, City-road, E.C.

THURSDAY, March 16th.—4 P.M., Mr. A. Baldwin: Some Painful Conditions About the Anus.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, March 13th.—2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Hinds Howell: Vascular Diseases of the Nervous System.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Martin: Meningitis.

WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic. 3.30 P.M., Dr. James Collier: Clinical Demonstration.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Riddoch: Heredo-familial Nervous Diseases.

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. James Collier: Diseases due to Neurotoxins.

PRINCESS ELIZABETH OF YORK HOSPITAL FOR CHILDREN, Shadwell, E.

WEDNESDAY, March 15th.—3.30 P.M., Prof. Leonard Findlay and Mr. K. J. Acton Davis will give a demonstration on Medical and Surgical Aspects of Rickets.

LONDON JEWISH HOSPITAL, Stepney Green, E.

THURSDAY, March 16th.—4 P.M., Dr. Harold Avery: Diet and Treatment of Gastric Disorders.

NATIONAL COUNCIL FOR MENTAL HYGIENE.

WEDNESDAY, March 15th.—5.30 P.M. (at 11, Chandos-street, Cavendish-square, W.), Dr. G. Somerville: Superstition.

ROYAL NORTHERN GROUP OF HOSPITALS.

WEDNESDAY, March 15th.—3.15 P.M. (at the Royal Chest Hospital, City-road), Dr. H. E. Symes-Thompson: Demonstration of Cases in the Wards.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, March 16th.—9 P.M., Dr. M. S. Thomson: Common Skin Diseases Often Missed.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, March 14th.—5 P.M., Dr. H. MacCormac: Malignant Growths of the Skin.

THURSDAY.—3 P.M., Dr. I. Muende: Pathology Demonstration.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL.

TUESDAY, March 14th.—5.30 P.M., Dr. C. Bruce Perry: Paper prepared by the late Dr. Carey Coombs on Thirty Years of Progress in the Study of Rheumatic Heart Disease.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ousley-road, Balham, S.W.

WEDNESDAY, March 15th.—4 P.M., Mr. E. T. C. Milligan: Hæmorrhoids.

ANCOATS HOSPITAL, Manchester.

THURSDAY, March 16th.—4.15 P.M., Mr. H. Platt: Common Disabilities of the Foot.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, March 14th.—4.15 P.M., Mr. Geoffrey Jefferson: The Explanation and the Clinical Application of the Early Symptoms of Increased Intracranial Pressure.

FRIDAY.—4.15 P.M., Mr. C. Roberts: Demonstration of Surgical Cases.

ST. MARY'S HOSPITALS, Manchester.

FRIDAY, March 17th.—4.15 P.M. (at the Whitworth-street West Hospital), Post-graduate Lecture. Mr. Arnold Jones: Nasal Obstruction in Sucklings.

GLASGOW POST-GRADUATE LECTURES.

WEDNESDAY, March 15th.—4.15 P.M. (at the Ophthalmic Institution), Dr. H. W. Thomson: Eye Cases.

POST-GRADUATE COURSE ON VENEREAL DISEASES.—A course in modern methods in the diagnosis and treatment of venereal disease is being held at the municipal clinic, 155, Regent-road, Salford, at 2 P.M., on Fridays from March 10th. Particulars may be had from Lieut.-Colonel E. Tytler Burke, M.B., venereal diseases officer to the city of Salford.

BRITISH HEALTH RESORTS

CONFERENCE AT BATH

At Bath last week-end Mr. Douglas Hacking, M.P. (Under-Secretary for Home Affairs), presided over a conference including representatives of the British Health Resorts Association, the British Spas Federation, the Travel and Industrial Development Association of Great Britain and Ireland, the Conference of Health and Pleasure Resorts, the spa practitioners' group of the British Medical Association, and many of the coastal health resorts and spas. The Mayor of Bath (Councillor Rhodes Cook) welcomed the delegates, and addresses were delivered on behalf of the various groups. A lively discussion followed, and the following resolution was unanimously passed :—

> That this conference, convinced of the necessity for the coördination of effort on behalf of the British health resorts, strongly urges that the various organisations interested therein should, through their chairman or other representative, and their secretary, confer at an early date with a view to defining their respective functions and suggesting lines of coöperation.

In the course of the discussion Lord Meston (chairman of the British Health Resorts Association) described the association's immediate objects as: (1) To obtain the most complete and scientific data of the curative and restorative values of the British health resorts—whether on the coast or moorland or spas; this entailed the coöperation of the local authorities and medical experts and the establishment of local branches. (2) To coördinate and examine this information. (3) To issue it as an annual handbook for the benefit of all medical practitioners. Lieut.-Colonel R. H. Elliot, M.D. (chairman of the executive of the Association), spoke of the great undeveloped resources in the British health resorts. Medical men must of course send their patients where they could get most good, whether at home or abroad, but many people were unaware of the great advantages of our own country in this respect. Mr. L. A. de L. Meredith, on behalf of the Travel and Industrial Development Association, gave some details of the work which was being done by them in making this country known overseas, through the press, by means of films (such as the one shown overnight at the reception), by broadcast talks, and in many other ways. By their constitution they were precluded from using their funds for advertising in this country. They were anxious to include in their overseas propaganda the medical case for the British health resorts, and for that they must have the help of the profession. Alderman Kelynge England (chairman of the British Spas Federation) described the objects of the Federation, established in 1917, and the new programme for bringing spa treatment within the reach of members of friendly societies and others who would otherwise be unable to afford it. The scheme provided for medical advice from a spa specialist, a complete course of spa treatment and accommodation, with board, in an approved hostel. Dr. C. W. Buckley, speaking for the spa practitioners' group and the physical medicine group of the British Medical Association, emphasised the great field for preventive treatment at the health resort. Small places were often of great advantage, and it was in the interest of the State that facilities for treatment should be brought within the reach of all classes. Belgium, Holland, and the Scandinavian countries were practically without spas and visitors from these countries should be welcomed at our health resorts by those who spoke their own language.

The morning session was marked by the unanimous desire of the speakers that a united movement should be pressed forward without delay, to which expression was given in the above resolution.

In the afternoon session the medical case for a comprehensive development of the health resorts as a national whole was set forth. Sir Humphry Rolleston, speaking on the Service of the Health Resorts to the Public, contrasted the subsidised spas of Europe with the British or individualised method, and stated that it was "obviously desirable to combine British initiative and individuality with more practical support and active encouragement from the Government, in order to develop in every direction the various resources and potentialities of our spas and health resorts, which so far had been somewhat neglected as a national asset." Sufficient attention had perhaps hardly been paid to the value of spas in the prevention of diseases, especially those prone to occur in or after middle life as the result of strain and worry. The cure should be open to the poor as well as to the rich. Dr. Fortescue Fox said that, with the growth of science and the increasing needs of crowded urban populations, new avenues of usefulness were opening for the health resorts. These calls could only be met by coördinated development. War-time experience had shown what a little organisation could do. On the continent large funds were available to keep the spas abreast of modern requirement and also—more important—State organisation and scientific guidance, special teaching, and official publicity. There was nothing so valuable to a health resort as the prestige of a national service. The health resorts, inland and on the coast, were the natural centres of physical medicine, which was now coming into its own. The mere care of the children on the coast was of national importance, and should be given much closer study. To meet the new demands on the health resorts and on those responsible for them three things were needed: a clear medical policy, organisation, and public support.

Mr. R. C. Vaughan bore witness to the many improvements effected in the British hotels, but they lay under serious difficulties, he said, because the hotel industry had no pity either from the Government or the local councils. A foreign hotel-keeper modernising his establishment applied for a rebate of taxation or even a government grant, as it was realised that his enterprise brought money into the country. In England improvements were heavily taxed and rated. The best hoteliers were most anxious to work with the doctors in providing necessary diets and conditions. Mr. K. W. C. Grand referred to the pioneer work of the Great Western Railway in coöperating with the health resorts on their line in the matter of publicity, and the efforts of the British railways to perfect their service in speed and comfort.

Dr. Alfred Cox, secretary of the British Health Resorts Association, spoke warmly in support of the new movement, and Lieut.-Colonel W. Byam, chairman of the advisory medical committee, in winding up the discussion, pointed out that up to date the expenses of the Association had been privately met, and appealed to the localities concerned for their generous support.

Mr. Leslie Paton has been elected an honorary member of the Hungarian Ophthalmological Society. He is already an honorary member of the French, Spanish-American, and Japanese Ophthalmological Societies.

necessary for absorbing each man into the industries. The number of cases suitable for admission to the settlement at Preston Hall greatly exceeds the number of vacancies which we have to offer owing to present financial and industrial limitations. But at present there are no fewer than 30 cases from one county council area in the village settlement at Preston Hall; it is estimated that the capital expenditure involved in settling these men in houses and workshops is about £17,000, and so far no contribution of any kind has been asked for from this particular county council in connexion with the establishment of these men in the village.

Contribution of Local Authorities

It is further the view of the council of management of Preston Hall that one of the best methods of adding to the number of settlers in the village would be for local authorities who are not in a position to undertake the direct provision of such accommodation to make use of established village settlements which have passed beyond the experimental stage. With this end in view it is suggested that the local authority shall pay no part of the capital for housing or for the establishment of men in the industries, but that the authority shall pay the sum of £78 per annum in respect of married men with their wives and families and the sum of £52 per annum in respect of single men admitted to the settlement.

The amounts just mentioned are suggested as those which appear, on the information available, to be appropriate and it is submitted that these amounts compare favourably with the cost of maintaining tuberculous individuals from public assistance and other funds, and that they are considerably less than providing public assistance together with treatment for tuberculous adult males and for the tuberculous members of their families. The council of management of Preston Hall propose that this sum shall be allocated to a capital and general fund which, at their discretion, would provide for the extension of the industries and be available for the growth and welfare of the village generally.

The council of management would agree, in return for this contribution to the general fund, to let a house at a low rent (average rent is 8s. per week) to each man admitted and to supervise the man medically throughout the entire course of his stay as a settler at Preston Hall: they would also provide facilities for the medical supervision of his wife and children at no additional cost to the authority. Settlers who break down in health are either pensioners for tuberculosis or are non-pensioners. In cases of the former the local authority and the Ministry of Pensions would, as at present, be advised of the admission of pensioners to the sanatorium, and treatment charges for such cases are, of course, recoverable from the Ministry of Pensions in full. Non-pensioners would be admitted for treatment without extra charge to the local authority.

It is understood, of course, that men selected for settlement would be given work at Preston Hall at a reasonable wage.

Selection of Suitable Cases

Cases suitable for settlement would be selected by the medical director at Preston Hall from amongst the patients sent there for treatment by the officers on the tuberculosis staff of the local authority. So far as ex-Service men are concerned it is clear that most of the patients would be ex-Service men without pensions. Cases selected for admission to the village settlement would be subject to review from time to time by the tuberculosis officer of the local authority, in consultation with the medical director at Preston Hall. The authority could limit the length of stay in the settlement in any individual case.

It is of interest to know that where a death has occurred in the village settlement there has not, as a rule, been any difficulty in arranging for the widow and family to return to the district in which they originally resided, but the council of management of Preston Hall feels strongly that, in the event of a death occurring, the contribution to the general fund by the local authority should be reduced by 50 per cent. until such times as alternative arrangements are made for the widow and family to remove to the district from which the family originally came.

The proportion of cases likely to be admitted to the settlement and the probable duration of their stay in the settlement is a matter which is, under the scheme proposed, as much in the hands of local authorities as with the settlement itself. If, for example, very ill men are sent for treatment as potential colonists it follows that none would be admitted to the settlement, but if the type of case which is likely to respond to treatment is admitted then the settlement can absorb just as many men as there is capital availabe for expansion of the scheme as a whole. Under this scheme local authorities would have the privilege of having two, six, ten, or more settlers in the village, as they desire.

As has been said, the probable duration of settlement would rest with local authorities acting in consultation with the medical director of the settlement, each case being reviewed from year to year. In this way, an authority could calculate its commitment from the very beginning and be at liberty to expand or retract as time went on.

It is realised, of course, that during the present financial stringency any active steps by local authorities in the direction indicated are quite out of the question, but even medical men, especially those in administrative posts, must budget ahead and prepare for the future. It will not be until each existing village settlement is freed from the handicap of restricted capital expenditure that the true function of the village settlement will be appreciated. Then, and then only, shall we be in a position to determine with any degree of certainty its true rôle in the anti-tuberculosis campaign.

ANTIMONY POISONING FROM ENAMELLED VESSELS

SEVERAL outbreaks of antimony poisoning in this country of late years have been traced to the use of enamelled vessels of inferior quality for the preparation of acid drinks such as lemonade. Antimony oxide is widely used, in place of tin oxide, as an opacifying agent in the enamelling of hardware, and it is readily attacked and disintegrated by acid, with the result that the antimony goes into solution. A leaflet[1] just issued by the Ministry of Health describes three such outbreaks, all of them due to the preparation of lemonade in enamelled jugs or buckets. At Newcastle-upon-Tyne, in 1928, 70 employees of a large firm became ill, complaining of a burning sensation in the stomach, colic, nausea, vomiting, and collapse; the drink was made with lemonade crystals containing 18 per cent. of tartaric acid, and a tumblerful of the fluid contained grs. 1½ of antimony calculated as tartar emetic, the emetic dose being gr. ½–1. At Folkestone, in 1929, 25 people were poisoned by lemonade made with fresh lemons in jugs whose enamel contained 9 per cent. of antimony oxide, and it is noteworthy that the jugs, when sold, bore labels saying "we guarantee all articles having this brand to be perfectly safe in use and free from any injurious substances." In the third outbreak, in a large London hospital last December, there were 65 cases of poisoning, and in some of them there was serious collapse. Here again the lemonade was made from fresh fruit. "It is the cheap low-grade enamels," the memorandum says, "that are the danger. These enamels are made from a mixture relatively low in silica content and are fired at a comparatively low temperature. They are not acid-proof and appear to be readily dissolved by citric, tartaric, acetic, and other acids present

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[1] Antimony poisoning due to the use of Enamelled Vessels. Ministry of Health. Memo 117/Med. London: H.M. Stationery Office. 1933. 1d.

NOTES, COMMENTS, AND ABSTRACTS

LOCAL AUTHORITIES AND VILLAGE SETTLEMENTS

By J. B. McDougall, M.D. Glasg., F.R.C.P., F.R.S. Edin.

MEDICAL DIRECTOR, BRITISH LEGION VILLAGE, PRESTON HALL, AYLESFORD, KENT

It is some fourteen years since the village settlement at Papworth was founded. During the period which has elapsed two further important additions have been made to the total strength of the village settlement movement in this country—one at Barrowmore Hall, in Cheshire, and the other at the British Legion village, Preston Hall, in Kent. Sir Pendrill Varrier-Jones, the creator of Papworth, was also the creator of Preston Hall in Kent; but in any account, however brief, of the early history of village settlement work the name of the late Dr. Stanley Tinker, the first director of Barrowmore Hall, can never be forgotten. I feel sure that his early death did much to retard the progress of the village settlement movement in this country.

The work of Sir Pendrill Varrier-Jones is well known throughout the world, and whatever criticisms may be levelled against village settlements there is unanimity in the view that the "Papworth experiment" has been a model of its kind and must always form the foundations upon which similar work must be built.

It may, however, be pertinent to ask: Why, in view of the declared success of Papworth, are there not more village settlements in Great Britain? I have been at a difficulty in answering this question when foreign visitors have come to Preston Hall, for a complete reply to the question must necessarily take into account the psychology of public health committees, the mechanism of local authority finance, and local industrial resources—points which are rarely appreciated to the full by visitors from other countries.

Difficulties of the Present System

At conferences and during private discussions with colleagues in the tuberculosis service in this country I have encountered the following criticisms:—

1. The difficulties in establishing new industries de novo, to be manned by sub-standard labour, are too numerous, especially in areas where the majority of the male population normally follow one particular industry —e.g., coal-mining in South Wales and Yorkshire.
2. Local authorities are no doubt prepared, subject to the approval of the Ministry of Health, to undertake the necessary capital expenditure, but it is the fear of possibly having to meet a large and recurrent annual loss on trading that is the most serious obstacle in the path of local authorities.
3. If the settlement is a success on the commercial side it could be so only by successful trading in competition with ratepayers, the majority of whom are resident within the administrative area of the authority; if a loss had to be met the subsidy would, under existing conditions, have to be paid—in part at least—from the rates.
4. The relative success of Papworth and Preston Hall has obscured the fact that there have been a number of schemes in different parts of the country which have not made the progress anticipated.
5. Substantial alterations in the present "block grant" system of budgeting would be necessary to enable local authorities to regard the sanatorium, industries, and estate as one account for the purposes of audit.
6. The total number of settlers at Papworth, Preston Hall, and Barrowmore Hall, the three largest settlements in the country, number approximately 325. Papworth has been in existence for some 14 years, Preston Hall for 7 years under the British Legion, and Barrowmore Hall for nearly 10 years. The total contribution of the village settlement to the anti-tuberculosis campaign is therefore almost negligible.
7. Unity of control is desirable in a village settlement, and there are few men trained in the complicated administration of a village settlement.

In reply to such criticisms as these I would say at once that I am in entire agreement with the view that local authorities are at a distinct disadvantage in embarking upon settlement work. And in the absence of greater experience than that which is available at Papworth, Preston Hall, and Barrowmore Hall it would, to say the least, be a risky proceeding for a local authority to begin with a preconceived idea of establishing a large village settlement. It is not, however, quite fair criticism to say that the contribution of the village settlement to the anti-tuberculosis campaign is insignificant merely because the combined contribution of the three existing village settlements is small, for there are several important factors involved over which the present village settlements have no control. The first of these is capital. All three organisations—the Cambridgeshire Tuberculosis Colony at Papworth, the British Legion at Preston Hall, and the East Lancashire Red Cross Society at Barrowmore Hall in Cheshire—are voluntary organisations, dependent to a large extent upon the generosity of the public for the capital at their disposal.

At Papworth and at Barrowmore Hall the financial resources are very limited, but at Preston Hall—the British Legion village, controlled by one of the largest voluntary organisations in the country—the position is different. There is not the slightest doubt that Preston Hall could expand by building more houses in the estate section for additional settlers and by increasing the scope of the existing workshops. As it is, growth has been multiplied by five in seven years, thanks to the soundness of the principles laid down by Sir Pendrill Varrier-Jones in 1925 when he first undertook the difficult task of reconstruction. And as a result of close contact with the work at Preston Hall from day to day during nearly six years I have no hesitation in saying that it would be practicable to add 12 to 15 settlers per annum to the British Legion village, whilst at the same time increasing the scope of the industries pari passu with the extension of the housing accommodation. What the ultimate size of the village would be no one can say. It might be better to have two villages, as at Papworth and Enham, each being steered on a similar course under a unified administration. But, so far as Preston Hall is concerned, I take the view that, the fundamentals having been established, the experimental stage having been passed, the industrial position having been made relatively stable, the British Legion must now ask for further assistance to come from local authorities and the Ministry of Health. The work of the British Legion for tuberculous ex-Service men at Preston Hall is merely one, and quite a small part, of the main functions of the British Legion; to expand Preston Hall indefinitely out of Poppy-day funds for the benefit of one class of disabled ex-Service men would not be in keeping with the professed ideals of the British Legion which has a much wider field to explore.

Suggested Scheme of Coöperation with Local Authorities

In a memorandum which I recently submitted to the council of management of Preston Hall, it was pointed out that at the present moment no fewer than 152 ex-patients are in residence in the British Legion village; 124 of these are living in houses in the village with their wives and families. The majority of these men, but for the scheme, would have returned to their local authorities and would have been reintroduced into the vicious cycle which we know only too well. The council of management of Preston Hall are of the opinion that at least one of the ways in which local authorities may become identified with settlement work is by coöperating on the medical side with existing settlements. I am advised that it would be impossible for local authorities to build houses with their own capital at Preston Hall, and to furnish a proportion of the capital

ADDRESSES AND ORIGINAL ARTICLES

PNEUMOCOCCAL INFECTIONS *

By Robert Cruickshank, M.D. Aberd., D.P.H.

LECTURER IN BACTERIOLOGY, THE UNIVERSITY AND ROYAL INFIRMARY, GLASGOW; BACTERIOLOGIST TO GLASGOW ROYAL INFIRMARY

I.—LOBAR PNEUMONIA IN THE INDIVIDUAL †

The apologia for my subject is twofold. The continued prevalence of bacterial diseases disseminated by spray or droplet infection from the respiratory tract is in itself sufficient justification for bringing to your notice the group of respiratory infections—lobar pneumonia, broncho-pneumonia, and bronchitis—the most common cause of which is the pneumococcus. The need for a re-orientation in our methods of dealing with respiratory tract infections as well as a concentration of attack on this formidable group which includes measles, whooping-cough, scarlet fever, and diphtheria, is becoming generally realised by medical officers of health. In pneumonia even a cursory consideration reveals a complicated problem. Although "acute primary pneumonia" is a notifiable disease, there is no provision under the Act for a clinical separation of lobar from broncho-pneumonia, all pneumonias are not caused by the same organism, and even among pneumococcal pneumonias there are numerous different infecting types. It follows that the established facts about pneumococcal lobar pneumonia as a specific infection are still scanty and we cannot hope to diminish its incidence without an accurate knowledge of its behaviour.

The second reason is a corollary of the first but is more intimate. Three years ago an investigation into the value of the serum treatment of pneumonia was commenced in the Glasgow Royal Infirmary, with the financial assistance of the Scottish Branch of the British Red Cross Society, and has now developed into a large scale research into the clinical, bacteriological, and epidemiological aspects of the disease, in several hospitals, through the kindly coöperation of the medical officer of health, Dr. A. S. M. Macgregor. It cannot be too strongly emphasised that the investigation is the work of a team; indeed, work of this kind can only hope to be fruitful through the active coöperation of clinician, bacteriologist, and epidemiologist. Although the data so far collected are largely corroborative of results obtained elsewhere, there are not, so far as we are aware, comparable findings in our country, so that our data may be useful as a standard for comparison when similar investigations are instituted, as we hope they will be, in various centres in Britain. In these lectures I shall utilise material, including 1215 serologically typed cases of lobar pneumonia, collected between February, 1930, and September, 1932, and shall discuss in turn Lobar Pneumonia in the Individual, Lobar Pneumonia in the Community, and Broncho-pneumonia and other Pneumococcal Infections. It is obviously impossible in the compass of three lectures to review the enormous literature on pneumococcal infections. While, therefore, a certain orderly arrangement and sequence of facts will be attempted, greater prominence will be given to those aspects of the problem with which our own investigations have been concerned.

In considering any specific bacterial infection in the individual there are certain questions to which we expect answers. Of the bacteriologist we ask "What is the organism?" and "How does it affect the individual?"; of the physician we ask, "What is the patient's response to infection?"; of the immunologist, "How is the infection overcome?"; and of the therapeutist, "Is there a specific antidote?" When these questions are applied to lobar pneumonia, it will be seen how inadequate are some of the answers.

What is the Organism?

The pneumococcus is related to the large family of streptococcus. Its distinguishing characters are the possession of a capsule, ready autolysis best exemplified by its solubility in bile, and its very high pathogenicity for the mouse. Of these three tests of identity, bile-solubility is the only absolute one and should never be omitted. The high pathogenicity for mice is most useful in isolating the pneumococcus from sputum or other sources where there is a mixture of organisms. But the most important biological character of the pneumococcus is its possession of a capsule. Neufeld and Händel (1909) first discovered that pneumococcal strains are not all serologically identical. In 1913 Dochez and Gillespie, of the Rockefeller Institute, and F. S. Lister, of the South African Institute of Medical Research, independently, and by quite different methods, showed that there was a number of strictly specific pneumococcal strains responsible for lobar pneumonia. The Americans labelled their most common infecting Types I., II., III., and recognised in addition a heterogeneous Group IV., while Lister named his most frequent types A, B, C, &c. It was subsequently shown that C, B, and E corresponded respectively with the American Types I., II., and III., whereas A, the most common type in South Africa, was not identified with any of the American strains. The next step was the demonstration by Dochez and Avery (1917) that the pneumococcus parted, during the active stage of growth in vitro and during infection in vivo, with a soluble substance which was specific for each type and which was apparently associated with the capsule of the organism. Heidelberger and Avery (1923) in a chemical analysis found the specific soluble substance (S.S.S.) to be of carbohydrate nature and—a discovery of greater import—the chemical constitution of the S.S.S. from the three serological Types I., II., and III. was distinctive for each type. Griffith (1923) showed that the pneumococcus may by various methods be wholly deprived of its capsule and become a rough or R strain; it then no longer belongs to a specific type and all R strains are antigenically identical

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* *Acknowledgments.*—My first debt is to clinical and public health colleagues: in the Royal Infirmary, Drs. John Cowan, A. W. Harrington, and J. Fleming; at Woodilee Hospital, Dr. J. McLeod; at Ruchill Hospital, Dr. T. Anderson; at Knightswood Hospital, Dr. I. M. Christie; at the Royal Hospital for Sick Children, Prof. G. B. Fleming and Dr. J. W. S. Blacklock; and in the Sanitary Chambers, Dr. A. S. M. Macgregor, medical officer of health, and his statistical staff. The bulk of the cases of lobar pneumonia analysed in these lectures have been admitted to Belvidere Hospital, largely under the care of Dr. J. Montgomery, with whom I have collaborated during the past three years. To him especially I am indebted for his most careful clinical examination of the cases, without which such work as this would be valueless. Much of the technical work in the laboratory has been done by my laboratory assistant, Mr. D. B. Colquhoun. I have to thank Prof. C. H. Browning, Dr. Cowan, and Dr. Macgregor for revision of the text and for much valuable advice and criticism. The Medical Research Council have given me financial assistance and also encouragement throughout the investigation.

† The first Milroy lecture for 1933 delivered before the Royal College of Physicians of London on Feb. 23rd.

in foods. The antimony oxides disseminated throughout the enamel are thus exposed to the action of these acids and any trioxide present goes into solution."

ANGER IN CHILDREN

A COMPREHENSIVE study of the outstanding response in behaviour of both normal and abnormal children which reaches us from America[1] may be of little practical value to those in daily contact with difficult children. But Prof. Goodenough's inquiry provides useful data on the type of child-reaction which may become a problem in certain circumstances. The study was so arranged that the qualifications of the observers could be established and the conditions of observation rigidly adhered to. It was necessary at the outset to define the types of emotional response in children in order that the specific anger response could be defined and its field of operation determined. Age- and sex-incidence is considered as well as frequency, duration, and occasion. No moment in the life of the child was left unconsidered in relation to anger —i.e., sleep, enuresis, physical conditions, and everyday hygiene and habits. Thus all basic occasions for outbursts were studied in order that family and group factors could be given their proper weight. Pædiatricians and child psychiatrists will find the chapter on methods of control of some assistance. It is here, however, that the complexity and variability of the reaction is driven home to us. For however behaviourism may clarify our understanding of emotional response by simple statement of problems in terms of stimulus and response, the parent-child relationship in which, and through which, anger is most frequently expressed, is more complicated than the laboratory method makes it appear. Anger is an end-result and even then is a part of a tangled skein of emotions, the causes of which lie in the mixed feelings of the child towards its parents. The examples are more simple and convincing than most of those we meet with in practice.

Appointments

BLIGH, J. M., M.D., Ch.B. Liverp., has been appointed Medical Referee under the Workmen's Compensation Act for Liverpool County Court District.

COPEMAN, W. S. C., M.B., M.R.C.P. Lond., Assistant Physician (with charge of children), West London Hospital.

ELLIS, GWYNETH N., House Surgeon, Royal Hospital for Children, Bradford.

HARRIS, K. E., M.D., M.R.C.P. Lond., Physician to Out-patients, Royal Chest Hospital, City-road.

Putney Hospital: CROOK, E. A., M.Ch.Oxf., F.R.C.S. Eng., and MASSIE, G., M.S. Lond., F.R.C.S. Eng., Surgeons.

Vacancies

For further information refer to the advertisement columns

Aberdeen University.—Lecturer in Medicine. £400.

Aylesbury, Buckinghamshire County Council.—Asst. County M.O.H. and M.O.H. £800.

Barnstaple, North Devon Infirmary.—Res. M.O. At rate of £150.

Brighton, Royal Sussex County Hospital.—Cas. H.S. £120.

Burden Mental Research Trust, B.M.A. House, Tavistock-square, W.C.—Principal Investigator. £750.

Burnley Municipal Hospital.—Jun. Res. M.O. £150.

Bury Infirmary.—H.S. to Special Depts. At rate of £175.

Durham County Hospital.—H.S. £150.

East Ham Memorial Hospital, Shrewsbury-road, E.—H.P. At rate of £150. Also H.S. and Cas. O. At rate of £120.

Edinburgh City, Public Health Dept.—Sen. Asst. M.O. £600.

Evelina Hospital for Sick Children, Southwark, S.E.—Hon. Physician to the Skin Dept. Also H.S. At rate of £120.

Greenwich, Dreadnought Hospital.—H.P. and H.S. Each at rate of £110.

Hampstead General and N.W. London Hospital, Haverstock-hill, N.W.—Cas. Surg. O. for Out-patient Dept., Bayham-street. At rate of £100.

Harrogate, Royal Bath Hospital.—Res. M.O. At rate of £156.

Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W. Res. H.S. At rate of £75.

Hospital for Tropical Diseases, Endsleigh-gardens, W.C.—H.P. At rate of £120.

Hove Hospital, Sussex.—Res. M.O. £200.

Ilford, King George Hospital.—Hon. Surgeon.

Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.

Leeds, Herzl Moser Hospital, Leopold-street.—R.M.O. £200.

Leicester Royal Infirmary.—Two Cas. H.S.'s. Each £125.

Liverpool, Mill-road Infirmary.—Med. Supt. £1000.

Liverpool, Royal Southern Hospital.—Orthopædic H.S. Also M.O. to Special Depts. and Res. Anæsthetist. Each at rate of £60.

L.C.[illegible]

Lon[illegible] Dept. £400. Hon. Asst. Surgeon. [illegible] Reg. to Ear, Nose and Throat Dept. £150.

London Lock Hospital, 283, Harrow-road, W.—Res. M.O. At rate of £175. Also Surg. Reg. £100.

London Lock Hospital, 91, Dean-street, W.—Res. M.O. At rate of £175.

Manchester, Ancoats Hospital.—Res. Surg. O. £200. Also Orthopædic H.S. At rate of £100.

Manchester Ear Hospital, Grosvenor-square, All Saints.—Res. H.S. £120.

Manchester Hospital for Consumption, &c.—Asst. M.O. for Crossley Sanatorium. £200.

Manchester, St. Mary's Hospitals.—Res. Surg. O. for High-street Hospital. £175. Also Two H.S.'s for Whitworth-street West Hospital. Each at rate of £50.

Manchester, Victoria Memorial Jewish Hospital.—Res. Surg. O. £200. Also Jun. H.S. and Res. M.O. Each at rate of £125.

Manchester, Withington Hospital.—Asst. M.O. £300.

Miller General Hospital, Greenwich-road, S.E.—H.P. £100.

Ministry of Health, Whitehall, S.W.—Vacancy on Medical Staff. £833.

Mitcham U.D.C.—Part-time M.O. At rate of £300.

Newcastle-upon-Tyne, Hospital for Sick Children.—H.P. Also Sen. and Jun. H.S. Each at rate of £100.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—Hon. Physician.

Northwood, Mount Vernon Hospital.—Res. M.O. £250. Also Asst. for Radio-therapeutic Dept.

[illegible] *Hospital.*—H.P. At rate of £150.

[illegible] *ary.*—H.S. At rate of £175.

[illegible] *Harrow-road, W.*—M.O. £325.

Princess Beatrice Hospital, Richmond-road, Earl's Court, S.W.—Res. M.O. At rate of £110.

Princess Elizabeth of York Hospital for Children, Shadwell, E.—H.P. and Cas. O. Each £125.

Princess Louise Kensington Hospital for Children, St. Quintin-avenue, N. Kensington, W.—H.S. At rate of £75. Also Hon. Anæsthetist.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W. Asst. to Pædiatrician and M.O. to Infant Consultation Centre. 1½ gns. per Clinic.

Royal National Orthopædic Hospital, 234, Great Portland-street, W.—H.S. At rate of £150.

St. Leonards-on-Sea, Buchanan Hospital.—Sen. and Jun. H.S. At rate of £175 and £125 respectively.

St. Mary's Hospital, W.—Cas. H.S. At rate of £100.

St. Paul's Hospital for Diseases of the Genito-Urinary Organs and Skin, Endell-street, Holborn, W.C.—H.S. At rate of £150.

[illegible] *Bloemfontein.*—Radiologist. £900.

[illegible] *pital.*—Second H.S. £100.

[illegible] *Vomen, Clapham-common, S.W.*—H.P. and H.S. Each at rate of £100.

South Shields, Ingham Infirmary.—Jun. H.S. £150.

Stoke-on-Trent, North Staffordshire Royal Infirmary, Hartshill.—Asst. Hon. Surgeon.

Swansea General and Eye Hospital.—H.P. At rate of £140.

Wakefield, West Riding Mental Hospital.—Asst. M.O. £350.

Watford, Herts, Peace Memorial Hospital.—Two Res. Officers. Each at rate of £150.

West Bromwich and District General Hospital.—H.P. and Two Cas. H.S.'s. Each at rate of £200.

West London Hospital, Hammersmith-road, W.—H.P. Two H.S.'s to Spec. Depts. Also Res. Anæsthetist. Each at rate of £100.

Willesden General Hospital, N.W.—Res. Cas. O. At rate of £100.

Winchester, Royal Hampshire County Hospital.—H.P. At rate of £125.

Windsor, King Edward VII Hospital.—H.S. At rate of £100.

The Chief Inspector of [illegible] appointments for Certifyin[illegible] ixworth, Northampton; and

The Secretary of State fo[illegible]s notice that he is considering [illegible] Referee or Referees under th[illegible] Act for [illegible] Court Districts: West London [illegible]on and Wood Green, Romford [illegible], Bow (Circuit No. 40), Willesden [illegible] Abbey (Circuit No. 56). Appli[illegible] Private Secretary, Home Office, not later than March 29th.

Vacancies are also announced at Halifax County Court District at Fort William Sheriff Court District (Argyll, &c.); and at Lochmaddy and Portree Sheriff Court Districts (Inverness, &c.).

Births, Marriages, and Deaths

BIRTHS

BEARE.—On Feb. 27th, at Deepdene Park-road, Dorking, the wife of C. E. Beare, M.B., F.R.C.S., of a daughter.

ROBERTSON.—On March 3rd, at Southgate-street, Winchester, the wife of Dr. Robertson, of a son.

DEATHS

HOBHOUSE.—On March 2nd, at Grosvenor-hill, S.W., Edmund Hobhouse, M.D., F.R.C.P., aged 72.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths

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[1] Anger Responses in Young Children. By Florence L. Goodenough, professor in the Institute of Child Welfare, University of Minnesota. University of Minnesota Press Monograph. No. IX. Minneapolis. 1932. Pp. 278. 14*s.* 6*d.*

ADDRESSES AND ORIGINAL ARTICLES

PNEUMOCOCCAL INFECTIONS[*]

By Robert Cruickshank, M.D. Aberd., D.P.H.

LECTURER IN BACTERIOLOGY, THE UNIVERSITY AND ROYAL INFIRMARY, GLASGOW; BACTERIOLOGIST TO GLASGOW ROYAL INFIRMARY

I.—LOBAR PNEUMONIA IN THE INDIVIDUAL[†]

The apologia for my subject is twofold. The continued prevalence of bacterial diseases disseminated by spray or droplet infection from the respiratory tract is in itself sufficient justification for bringing to your notice the group of respiratory infections—lobar pneumonia, broncho-pneumonia, and bronchitis—the most common cause of which is the pneumococcus. The need for a re-orientation in our methods of dealing with respiratory tract infections as well as a concentration of attack on this formidable group which includes measles, whooping-cough, scarlet fever, and diphtheria, is becoming generally realised by medical officers of health. In pneumonia even a cursory consideration reveals a complicated problem. Although "acute primary pneumonia" is a notifiable disease, there is no provision under the Act for a clinical separation of lobar from broncho-pneumonia, all pneumonias are not caused by the same organism, and even among pneumococcal pneumonias there are numerous different infecting types. It follows that the established facts about pneumococcal lobar pneumonia as a specific infection are still scanty and we cannot hope to diminish its incidence without an accurate knowledge of its behaviour.

The second reason is a corollary of the first but is more intimate. Three years ago an investigation into the value of the serum treatment of pneumonia was commenced in the Glasgow Royal Infirmary, with the financial assistance of the Scottish Branch of the British Red Cross Society, and has now developed into a large scale research into the clinical, bacteriological, and epidemiological aspects of the disease, in several hospitals, through the kindly coöperation of the medical officer of health, Dr. A. S. M. Macgregor. It cannot be too strongly emphasised that the investigation is the work of a team; indeed, work of this kind can only hope to be fruitful through the active coöperation of clinician, bacteriologist, and epidemiologist. Although the data so far collected are largely corroborative of results obtained elsewhere, there are not, so far as we are aware, comparable findings in our country, so that our data may be useful as a standard for comparison when similar investigations are instituted, as we hope they will be, in various centres in Britain. In these lectures I shall utilise material, including 1215 serologically typed cases of lobar pneumonia, collected between February, 1930, and September, 1932, and shall discuss in turn Lobar Pneumonia in the Individual, Lobar Pneumonia in the Community, and Broncho-pneumonia and other Pneumococcal Infections. It is obviously impossible in the compass of three lectures to review the enormous literature on pneumococcal infections. While, therefore, a certain orderly arrangement and sequence of facts will be attempted, greater prominence will be given to those aspects of the problem with which our own investigations have been concerned.

In considering any specific bacterial infection in the individual there are certain questions to which we expect answers. Of the bacteriologist we ask "What is the organism?" and "How does it affect the individual?"; of the physician we ask, "What is the patient's response to infection?"; of the immunologist, "How is the infection overcome?"; and of the therapeutist, "Is there a specific antidote?" When these questions are applied to lobar pneumonia, it will be seen how inadequate are some of the answers.

What is the Organism?

The pneumococcus is related to the large family of streptococcus. Its distinguishing characters are the possession of a capsule, ready autolysis best exemplified by its solubility in bile, and its very high pathogenicity for the mouse. Of these three tests of identity, bile-solubility is the only absolute one and should never be omitted. The high pathogenicity for mice is most useful in isolating the pneumococcus from sputum or other sources where there is a mixture of organisms. But the most important biological character of the pneumococcus is its possession of a capsule. Neufeld and Händel (1909) first discovered that pneumococcal strains are not all serologically identical. In 1913 Dochez and Gillespie, of the Rockefeller Institute, and F. S. Lister, of the South African Institute of Medical Research, independently, and by quite different methods, showed that there was a number of strictly specific pneumococcal strains responsible for lobar pneumonia. The Americans labelled their most common infecting Types I., II., III., and recognised in addition a heterogeneous Group IV., while Lister named his most frequent types A, B, C, &c. It was subsequently shown that C, B, and E corresponded respectively with the American Types I., II., and III., whereas A, the most common type in South Africa, was not identified with any of the American strains. The next step was the demonstration by Dochez and Avery (1917) that the pneumococcus parted, during the active stage of growth in vitro and during infection in vivo, with a soluble substance which was specific for each type and which was apparently associated with the capsule of the organism. Heidelberger and Avery (1923) in a chemical analysis found the specific soluble substance (S.S.S.) to be of carbohydrate nature and—a discovery of greater import—the chemical constitution of the S.S.S. from the three serological Types I., II., and III. was distinctive for each type. Griffith (1923) showed that the pneumococcus may by various methods be wholly deprived of its capsule and become a rough or R strain; it then no longer belongs to a specific type and all R strains are antigenically identical in foods. The antimony oxides disseminated throughout the enamel are thus exposed to the action of these acids and any trioxide present goes into solution."

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[*] *Acknowledgments.*—My first debt is to clinical and public health colleagues: in the Royal Infirmary, Drs. John Cowan, A. W. Harrington, and J. Fleming; at Woodilee Hospital, Dr. J. McLeod; at Ruchill Hospital, Dr. T. Anderson; at Knightswood Hospital, Dr. I. M. Christie; at the Royal Hospital for Sick Children, Prof. G. B. Fleming and Dr. J. W. S. Blacklock; and in the Sanitary Chambers, Dr. A. S. M. Macgregor, medical officer of health, and his statistical staff. The bulk of the cases of lobar pneumonia analysed in these lectures have been admitted to Belvidere Hospital, largely under the care of Dr. J. Montgomery, with whom I have collaborated during the past three years. To him especially I am indebted for his most careful clinical examination of the cases, without which such work as this would be valueless. Much of the technical work in the laboratory has been done by my laboratory assistant, Mr. D. B. Colquhoun. I have to thank Prof. C. H. Browning, Dr. Cowan, and Dr. Macgregor for revision of the text and for much valuable advice and criticism. The Medical Research Council have given me financial assistance and also encouragement throughout the investigation.

[†] The first Milroy lecture for 1933 delivered before the Royal College of Physicians of London on Feb. 23rd.

ANGER IN CHILDREN

A COMPREHENSIVE study of the outstanding response in behaviour of both normal and abnormal children which reaches us from America [1] may be of little practical value to those in daily contact with difficult children. But Prof. Goodenough's inquiry provides useful data on the type of child-reaction which may become a problem in certain circumstances. The study was so arranged that the qualifications of the observers could be established and the conditions of observation rigidly adhered to. It was necessary at the outset to define the types of emotional response in children in order that the specific anger response could be defined and its field of operation determined. Age- and sex-incidence is considered as well as frequency, duration, and occasion. No moment in the life of the child was left unconsidered in relation to anger—i.e., sleep, enuresis, physical conditions, and everyday hygiene and habits. Thus all basic occasions for outbursts were studied in order that family and group factors could be given their proper weight. Pædiatricians and child psychiatrists will find the chapter on methods of control of some assistance. It is here, however, that the complexity and variability of the reaction is driven home to us. For however behaviourism may clarify our understanding of emotional response by simple statement of problems in terms of stimulus and response, the parent-child relationship in which, and through which, anger is most frequently expressed. is more complicated than the laboratory method makes it appear. Anger is an end-result and even then is a part of a tangled skein of emotions, the causes of which lie in the mixed feelings of the child towards its parents. The examples are more simple and convincing than most of those we meet with in practice.

Appointments

BLIGH, J. M., M.D., Ch.B. Liverp., has been appointed Medical Referee under the Workmen's Compensation Act for Liverpool County Court District.
COPEMAN, W. S. C., M.B., M.R.C.P. Lond., Assistant Physician (with charge of children), West London Hospital.
ELLIS, GWYNETH N., House Surgeon, Royal Hospital for Children, Bradford.
HARRIS, K. E., M.D., M.R.C.P. Lond., Physician to Out-patients, Royal Chest Hospital, City-road.
Putney Hospital: **CROOK, E. A.**, M.Ch.Oxf., F.R.C.S. Eng., and **MASSIE, G.**, M.S. Lond., F.R.C.S. Eng., Surgeons.

Vacancies

For further information refer to the advertisement columns

Aberdeen [illegible] Medicine. £400.
Aylesbury, [illegible] *Council.*—Asst. County M.O.H.
Barnstaple, North Devon Infirmary.—Res. M.O. At rate of £150.
Brighton, Royal Sussex County Hospital.—Cas. H.S. £120.
Burden Mental Research Trust, B.M.A. House, Tavistock-square, W.C.—Principal Investigator. £750.
Burnley Municipal Hospital.—Jun. Res. M.O. £150.
Bury Infirmary.—H.S. to Special Depts. At rate of £175.
Durham County Hospital.—H.S. £150.
East Ham Memorial Hospital, Shrewsbury-road, E.—H.P. At rate of £150. Also H.S. and Cas. O. At rate of £120.
Edinburgh City, Public Health Dept.—Sen. Asst. M.O. £600.
Evelina Hospital for Sick Children, Southwark, S.E.—Hon. Physician to the Skin Dept. Also H.S. At rate of £120.
Greenwich, Dreadnought Hospital.—H.P. and H.S. Each at rate of £110.
Hampstead General and N.W. London Hospital, Haverstock-hill, N.W.—Cas. Surg. O. for Out-patient Dept., Bayham-street. At rate of £100.
Harrogate, Royal Bath Hospital.—Res. M.O. At rate of £150.
Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W. Res. H.S. At rate of £75.
Hospital for Tropical Diseases, Endsleigh-gardens, W.C.—H.P. At rate of £120.
Hove Hospital, Sussex.—Res. M.O. £200.
Ilford, King George Hospital.—Hon. Surgeon.
Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.
Leeds, Herzl Moser Hospital, Leopold-street.—R.M.O. £200.
Leicester Royal Infirmary.—Two Cas. H.S.'s. Each £125.
Liverpool, Mill-road Infirmary.—Med. Supt. £1000.
Liverpool, Royal Southern Hospital.—Orthopædic H.S. Also M.O. to Special Depts. and Res. Anæsthetist. Each at rate of £60.
L.C.C. Consultant and Specialist Service.—Neurologists £2 12*s.* 6*d.* Anæsthetists £1 14*s.* per session. Radiologists £900.
London Hospital, E.—Paterson Research Scholar in Cardiac Dept. £400. Hon. Asst. Surgeon. Also First Asst. and Reg. to Ear, Nose and Throat Dept. £150.
London Lock Hospital, 283, Harrow-road, W.—Res. M.O. At rate of £175. Also Surg. Reg. £100.
London Lock Hospital, 91, Dean-street, W.—Res. M.O. At rate of £175.
Manchester, Ancoats Hospital.—Res. Surg. O. £200. Also Orthopædic H.S. At rate of £100.
Manchester Ear Hospital, Grosvenor-square, All Saints.—Res. H.S. £120.
Manchester Hospital for Consumption, &c.—Asst. M.O. for Crossley Sanatorium. £200.
Manchester, St. Mary's Hospitals.—Res. Surg. O. for High-street Hospital. £175. Also Two H.S.'s for Whitworth-street West Hospital. Each at rate of £50.
Manchester, Victoria Memorial Jewish Hospital.—Res. Surg. O. £200. Also Jun. H.S. and Res. M.O. Each at rate of £125.
Manchester, Withington Hospital.—Asst. M.O. £300.
Miller General Hospital, Greenwich-road, S.E.—H.P. £100.
Ministry of Health, Whitehall, S.W.—Vacancy on Medical Staff. £833.
Mitcham U.D.C.—Part-time M.O. At rate of £300.
Newcastle-upon-Tyne, Hospital for Sick Children.—H.P. Also Sen. and Jun. H.S. Each at rate of £100.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Hon. Physician.
Northwood, Mo [illegible] Res. M.O. £250. Also Asst. for [illegible]
Nottingham Ge [illegible] At rate of £150.
Oldham Roya [illegible] of £175.
Paddington [illegible] M.O. £325.
Princess Bea [illegible] *Earl's Court, S.W.*—Res. M.O. At rate of £110.
Princess Elizabeth of York Hospital for Children, Shadwell, E.—H.P. and Cas. O. Each £125.
Princess Louise Kensington Hospital for Children, St. Quintin-avenue, N. Kensington, W.—H.S. At rate of £75. Also Hon. Anæsthetist.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W. Asst. to Pædiatrician and M.O. to Infant Consultation Centre. 1½ gns. per Clinic.
Royal National Orthopædic Hospital, 234, Great Portland-street, W.—H.S. At rate of £150.
St. Leonards-on-Sea, Buchanan Hospital.—Sen. and Jun. H.S. At rate of £175 and £125 respectively.
St. Mary's Hospital, W.—Cas. H.S. At rate of £100.
St. Paul's Hospital for Diseases of the Genito-Urinary Organs and Skin, Endell-street [illegible] of £150.
South Africa, C [illegible] st. £900.
Southend-on-Se [illegible] O.
South London [illegible] *S.W.*—H.P. and [illegible]
South Shields, Ingham Infirmary.—Jun. H.S. £150.
Stoke-on-Trent, North Staffordshire Royal Infirmary, Hartshill.—Asst. Hon. Surgeon.
Swansea General and Eye Hospital.—H.P. At rate of £140.
Wakefield, West Riding Mental Hospital.—Asst. M.O. £350.
Watford, Herts, Peace Memorial Hospital.—Two Res. Officers. Each at rate of £150.
West Bromwich and District General Hospital.—H.P. and Two Cas. H.S.'s. Each at rate of £200.
West London Hospital, Hammersmith-road, W.—H.P. Two H.S.'s to Spec. Depts. Also Res. Anæsthetist. Each at rate of £100.
Willesden General Hospital, N.W.—Res. Cas. O. At rate of £100.
Winchester, Royal Hampshire County Hospital.—H.P. At rate of £125.
Windsor, King Edward VII Hospital.—H.S. At rate of £100.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Brixworth, Northampton; and Heckington, Lincoln.

The Secretary of State for the Home Department gives notice that he is considering th [illegible] l Referee [illegible] Act for [illegible] London [illegible] Romford [illegible] Willesden [illegible] Appli- [illegible] vate Secretary, Home Office, Whitehall, London, S.W., not later than March 29th.

Vacancies are also announced at Halifax County Court District at Fort William Sheriff Court District (Argyll, &c.); and at Lochmaddy and Portree Sheriff Court Districts (Inverness, &c.).

Births, Marriages, and Deaths

BIRTHS

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HOBHOUSE.—On March 2nd, at Grosvenor-hill, S.W., Edmund Hobhouse, M.D., F.R.C.P., aged 72.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths there has not yet been demonstrated any specific exo- or endo-toxin of the pneumococcus. How then is the obvious intoxication to be explained? If we examine first the experimental evidence, one thing is certain: the pneumococcus is only virulent for laboratory animals when it has a well-developed capsule around it. If the capsule is removed, or if the organism is allowed to disintegrate, virulence disappears. It would seem therefore as if the poison resided in the capsular substance or S.S.S. Toxins as we ordinarily know them are of protein constitution, can produce their lethal effect though separated from the parent organism, and their toxicity is destroyed by heat. S.S.S. is a carbohydrate substance unaffected by heat and injected by itself is absolutely harmless to the mouse or rabbit, animals highly susceptible to the pneumococcus. However, although it is not antigenic, it has the property of combining specifically with pneumococcus antibodies. In an experimental inqury Robertson and Sia (1927) have shown that animals, such as cat, dog, horse, which are resistant to pneumococcal infection, are so in virtue of natural opsonin. Further, if S.S.S. be added to a mixture of fresh unheated animal serum, plus the homologous avirulent pneumococcus, the latter will be enabled to multiply (Sia, 1926)—i.e., S.S.S. has the power of neutralising opsonin, a natural protector against infection. Incidentally, it must not be thought that the pneumococcus is unique in not having any demonstrable toxin. An example of the same phenomenon among capsulated organisms is afforded by the anthrax bacillus, and it is now known that numerous non-capsulated organisms are also endowed with specific soluble substances—for example, meningococcus, Shiga dysentery bacillus, streptococcus, leptospiræ.

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[1] Anger Responses in Young Children. By Florence L. Goodenough, professor in the Institute of Child Welfare, University of Minnesota. University of Minnesota Press Monograph. No. IX. Minneapolis. 1932. Pp. 278. 14*s.* 6*d.*

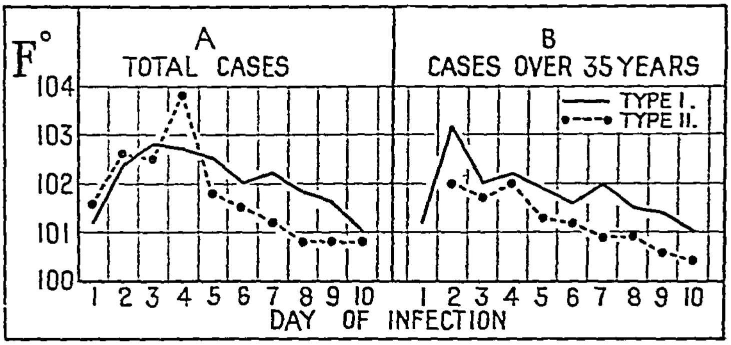

FIG. 3.—Composite temperature charts of Type I. and Type II. infections (each 100 cases).

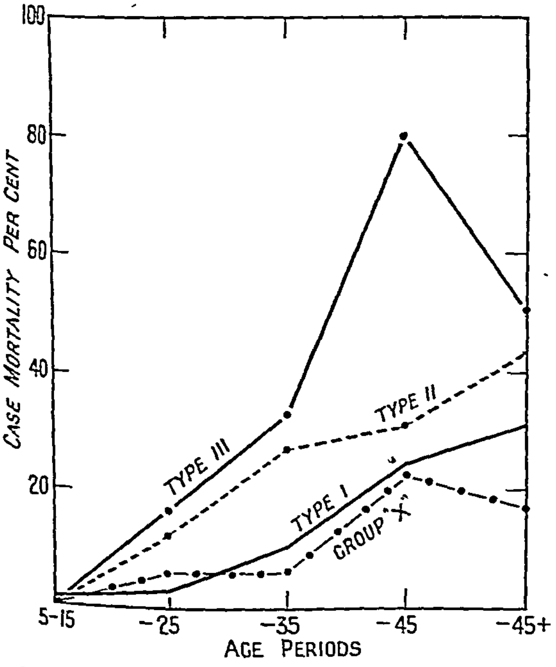

FIG. 2.—Mortality of types of pneumococcal infection in various age-groups.

Regarding the clinical evidence, it is worth while recording first the findings of the earlier workers. Eyre (1909), in an examination of the opsonic index in cases of lobar pneumonia, found that after an initial low period there was a gradual rise during the fifth, sixth, and seventh days in the cases that recovered reaching a maximum at or soon after crisis; the rise was closely paralleled by a rise in the leucocyte count. Lister based his initial observations regarding the specificity of pneumococcal types on the development of specific opsonins in the infected individual, immediately prior to the critical fall of temperature. There was no evidence of opsonin in the blood of fatal cases. Sia et al. (1928) have recently attacked the problem from a similar aspect and have demonstrated the importance of opsonin as well as agglutinin and pneumococcocidal power in the process of recovery. It will be remembered that in their animal experiments opsonin was neutralised by S.S.S. It is true of course that opsonin is only one of the elements in the complex substance known as antibody, but it is also true that it is directly responsible for sensitising the organism for attack by the leucocytes and the leucocytes play an important part in the fight against pneumococcal infection. S.S.S., therefore, may or may not be directly toxic to the cells of the host, but at least it is a powerful antiphagocytic agent and must play a large part in pneumococcal infection. Dochez and Avery have recovered it in the blood and urine of infected persons. Among 88 cases of lobar pneumonia it was present in the urine of 55, of whom 20 died (36·4 per cent.), while it was absent from the urine of 33, of whom 2 died (6 per cent.).

What is the Patient's Response?

The severity of infection in an individual suffering from pneumococcal lobar pneumonia depends largely on the age of the individual and the type of infecting pneumococcus. I shall consider only the influence of the pneumococcal type at this point. My clinical colleagues were early impressed by certain differences in the response of patients suffering from Types I. and II. pneumococcal pneumonia, and in 1931 we communicated some of our observations (Cruickshank, Fleming, and Montgomery). The death-rate from Types I., II., and III. pneumococcal pneumonia in our series of 1118 non-serum-treated cases was respectively 10·8, 21·5, and 40·9 per cent., and the same difference in mortality from the three types is evident when similar age-groups are contrasted (Fig. 2). An analysis was therefore made of certain clinical and laboratory findings in Types I., II., and III. pneumonia in an attempt to find how far these phenomena would help to explain the differences in the severity and mortality of these infections. There

(Reimann, 1925). The present conception then of the pneumococcus is of an organism with a protein nucleus common to the species surrounded by a carbohydrate envelope which, because of the differences in its chemical constitution, confers specificity upon the pneumococcus and divides the strains into a number of distinct serological types. So far, 32 such types have been separated by serological tests.

Besides a *qualitative* difference there is also a *quantitative* difference in the capsular substance of the three most common Types, I., II., and III. This difference is readily appreciable with Type III. pneumococcus which has a voluminous capsule and a spreading mucoid colony. The distinction between Types I. and II. is less evident. Avery et al. (1917) state that "in Type II. pneumococci the capsules are generally somewhat larger and denser than in Type I." We have stained many preparations by different methods of capsular staining, but have found it difficult to differentiate between Types I. and II. pneumococci in this way. We have been impressed, however, by differences in the size and appearance of the colonies of Types I., II., and III. pneumococci growing on artificial culture media. Examination under the microscope of young growing colonies (four to eight hours) has shown a definite difference in the colonial "texture" of each type, that of Type I. being most compact, of Type II. less close, and of Type III. a still looser texture, indicating, I think, a difference in the amount of capsular substance round each organism, so that the bigger the capsule the looser the texture of the colony (Fig. 1). There are other methods of demonstrating this quantitative difference if we accept the view that the capsule is intimately associated with the production of S.S.S. Dochez and Avery (1917), for example, found that in young broth cultures, S.S.S. was first demonstrable for Type III. pneumococcus, then for Type II., and lastly, for Type I., while Blake (1917) by inoculating separate mice with equal amounts of culture of Types I., II., and III. pneumococci showed that precipitinogen, presumably S.S.S., was demonstrable in the peritoneal exudate of Type III. mouse in five hours, of Type II. mouse in six hours, and of Type I. mouse in seven hours. Sufficient multiplication of the organisms to demonstrate agglutination did not occur in any case until eight hours after inoculation. I stress this quantitative difference in the S.S.S. as later I hope to show its relation to the intoxication and mortality in pneumonia.

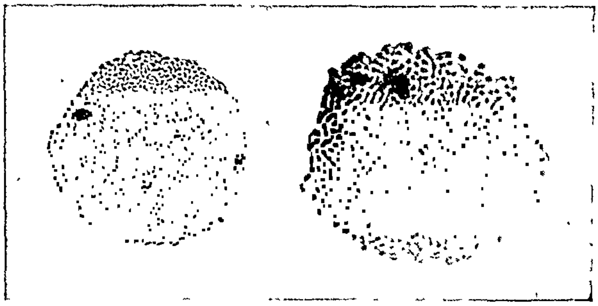

FIG. 1.—Six-hour colonies of pneumococci on serum agar showing closer texture of Type I. (on left) compared with Type II.

How Does the Organism Affect the Individual?

The mechanism of *infection*—how and where the organism penetrates the body's first line of defences, and how it is carried to its elective organ and tissue has not received from pathologists the attention it deserves. In pneumonia there are three obvious routes by which the pneumococcus may reach the lung—the air-passages, the peritracheal and peribronchial lymphatics, or the blood stream. The spread of infection along the bronchial mucous membrane does not, I think, occur in lobar pneumonia. The idea of a primary septicæmia or bacteriæmia with subsequent localisation in the lung appeals particularly to the clinician (see Kidd, 1912) who is impressed by the sudden onset of the infection frequently with rigor and profound toxæmia, and the finding of the pneumococcus in the blood within the first 24 hours of infection. In our own series the pneumococcus was recovered in two of six patients on whom blood culture was done within one day of the clinical onset of infection. In another patient blood culture happened to be done twice on the day before infection and again within 12 hours of the onset of fever, each time with negative result. On the fifth of the pneumonia Type II. pneumococcus was recovered from the blood.† A lymphogenous infection receives most support from the experimental production of pneumonia in monkeys (Blake and Cecil, 1920). These workers produced lobar pneumonia in 32 out of 37 freshly imported monkeys (*Macacus syrichtus* and *Cebus capucinus*) by intratracheal inoculation of highly virulent Types I., II., and III. pneumococci, whereas subcutaneous or intravenous inoculation resulted in a generalised infection without localisation in the lung. Inoculation into the nose or throat failed to produce any infection. In an examination of the pathology of the experimentally produced pneumonias, Blake and Cecil (1920) found that the pneumococcus first penetrated the walls of the larger bronchi at or near the hilum and that spread of the organism in the pulmonary tissue occurred primarily by way of the perivascular, peribronchial, and septal interstitial tissue and lymphatics, quickly reaching the pleura. Hepatisation began centrally and spread towards the periphery. It must in fairness be stated that other workers (e.g., McLeod and Gordon, see McLeod, 1929) have failed with monkeys to produce experimental lobar pneumonia by intratracheal inoculation.

The most probable explanation of the mechanism of infection then is of an early penetration of the tracheal or bronchial mucosa by the pneumococcus, a lymphatic spread to the lung root and a rapid lobar invasion of the susceptible lung tissue. "Spilling over" of the organisms into the blood stream may occur at any time during the first four to five days of infection, disappearing in patients that recover, but often becoming a true septicæmia in the fatal cases. In 330 patients in our series on whom blood culture was done only on the day of admission, there were 33 per cent. (two out of six) positive on the first day, 28 per cent. on the second day, 42 per cent. on the third day, 22 per cent. on the fourth day, and 15 per cent. on the fifth day; in 24 post-mortem examinations the pneumococcus was recovered from the spleen as well as from the lung in all but one case.

The consolidation of part of the lung leads to respiratory embarrassment, cyanosis, and anoxæmia, and while the mechanism of their production may be complex and still imperfectly understood, these phenomena are at least explicable on physiological grounds. There is, in addition, a varying degree of toxæmia or intoxication and the prognosis of the case depends as much on the severity of the toxæmia as on the degree of cyanosis or anoxæmia. But in spite of many attempts and occasional claims,

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† I am indebted to Dr. D. M. Hart, Glasgow Royal Maternity Hospital, for the record of this case.

Our experience of Type III. pneumonia is small. Blake (1931) has recently stated that Type III. pneumococcus is a less virulent organism than is generally supposed, the high mortality being due to its attack on older and debilitated individuals—e.g., over 50 per cent. of his 116 cases as compared with 20 and 30 per cent. for Types I. and II. infections were over the age of 40. Our figures in a smaller series of 41 cases agree with his findings, 56 per cent. of Type III. and only 28 and 36 per cent. of Types I. and II. pneumonias being over the age of 35. But while Type III. pneumococcus is less invasive, it is not in our experience less virulent, as at all age-groups the mortality-rate was higher than that of any other Type (see Fig. 2).

In explanation, therefore, of the difference in the severity and mortality of Types I., II., and III. pneumonia it is suggested that the important factor is the amount of S.S.S. elaborated. Type I. pneumococcus, although highly invasive, produces the least amount of S.S.S. and the patient responds briskly to the infection, by high temperature usually falling by crisis, high leucocytosis, and a moderate or mild degree of toxæmia—in fact the classical picture of lobar pneumonia. Type II. pneumococcus, elaborating more S.S.S., produces, particularly in patients over 35 years of age, a much more severe infection; the patient is more toxic and less reactive. Type III. pneumococcus, although it produces most S.S.S., has little invasive power, and is therefore a rare cause of lobar pneumonia, but infection when it occurs is usually very severe and often fatal.

An analysis of 60 cases of Group "X" pneumonia shows that the infection occurs more in the young than in the old, the pneumonia is quite a typical one with temperature maintained around 102° to 103° F., the infection is often mild and terminates frequently by lysis (63 per cent. in the series).

How is the Infection Overcome?

The varying duration of the fever in different infections has never been satisfactorily explained. Why should typhoid fever continue for 3 to 4 weeks, typhus for 12 days, erysipelas 7 to 8 days, and undulant fever for months perhaps? In this respect primary pneumococcal pneumonia is a specific infection which differs in some degree from streptococcal or staphylococcal or influenzal pneumonia (Cole, 1928). The mechanism of the critical fall of temperature in lobar pneumonia has been variously explained. McLeod (1929) who has recently discussed the matter is inclined to attribute considerable importance to the local processes in the lung in causing the death of the pneumococcus. We have repeated many observations of English and American workers, and have usually found that antibodies develop in the blood of the patient at or near crisis in those who recover and are absent in fatal cases. There have been exceptions—e.g., the finding of protective antibody in the presence of septicæmia and its absence until after the clinical crisis. In spite of these anomalies, the termination of the infection is probably due primarily to a general humoral antibody response. An analysis of the duration of infection supports this opinion. In 100 cases each of Types I. and II. pneumonia, and in 60 cases of Group "X" pneumonia, the duration of pyrexia was respectively 7·6, 7·7, and 7·5 days. When the duration of fever in cases under the age of 35 was compared with that of those over 35 it was found to be 7·4, 7·4, and 7·0, as against 8·4, 8·1, and 8·4 days. It seems obvious that the antibody mechanism responds more briskly and more quickly overcomes the infection in the young than in the old.

Another aspect of pneumococcal pneumonia which has been used as argument by those who do not believe that the general antibody reaction is responsible for arresting the infection is the tendency to repeated attacks. We have records of five instances of second attacks of pneumococcal lobar pneumonia at an interval of six months or more after the previous infection. In each case the second attack was due to a different serological type of pneumococcus from that of the first. In a sixth case a Group "X" pneumococcus was recovered both times and was not further differentiated. A seventh case seemed to be the exception to the rule. This patient was readmitted a year after an attack of Type II. pneumonia and again Type II. pneumococcus was recovered from his spit. Luckily for us, unluckily for the patient for he died, he developed an empyema from which a hæmolytic streptococcus was recovered. We had the further consolation of having proved this man to be a chronic carrier of Type II. pneumococcus during the period between his first and second attacks, and, of course, he was still harbouring the organism when he was readmitted. These second and third attacks serve, I think, to show the specificity of the pneumococcal infection and indicate not a lack of immunity to the infecting pneumococcus but a susceptibility to pneumonia. It may be remembered that Hedley Wright (1929) found a rabbit still resistant to Type I. pneumococcus ten months after a single injection of the same organism.

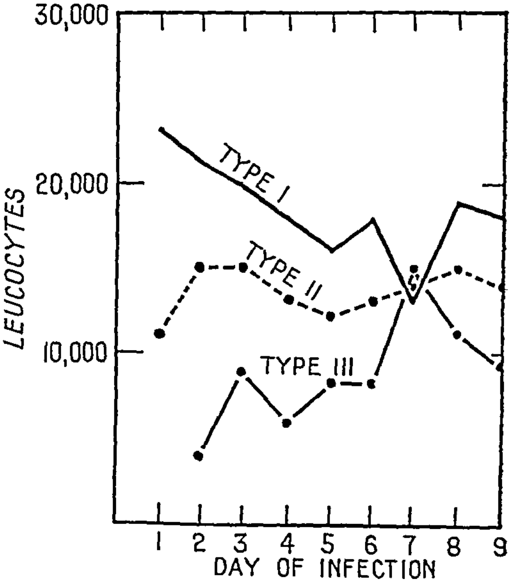

FIG. 4.—Leucocyte count in infection of the three types at various stages of the illness.

Is there a Specific Antidote?

The treatment of lobar pneumonia with antipneumococcal serum is no new development, and we owe much to American workers for their persistent efforts to make the treatment of pneumonia with specific antisera a practical possibility. Progress in recent years has been mainly concerned with the production of a refined and concentrated antiserum of high potency. The present obstacles to its wider use are its specificity which requires a bacteriological typing of the pneumonia, its expense and the need for intravenous medication, its doubtful value in pneumonia other than Type I. infection, and the difficulty of getting cases early for treatment when the serum is likely to be most effective. Let us deal were too few cases of Type III. pneumonia for it to be included in the full analysis.

(*a*) *Temperature.*—The highest recorded temperature on a four-hourly chart on each day of infection until temperature became normal was noted in each of 100 cases aged 15–70 of Types I. and II. pneumonia. The average temperature on each day for the 100 cases in each group and for the cases over and under 35 was calculated as was the number of pneumonias in each group terminating by crisis and by lysis (Fig. 3). A comparison of the composite charts shows that in Type I. pneumonia the temperature is maintained throughout the infection at a high level, usually above 102° F., whereas, in Type II. pneumonia, after an initial high temperature, evidence of a severe infection, the temperature gradually falls to a much lower level. The difference is accentuated if comparison is made between the groups over the age of 35 (Fig. 3). Although analysis of the pulse-rate was not made, it was noticed that in patients with Type II. pneumonia the pulse-rate did not so closely follow the fall in temperature as it did in Type I. infection. Critical fall in temperature occurred in 71 of the 100 Type I. pneumonias and in 52 of the Type II. cases.

(*b*) *Leucocyte count.*—The prognostic value of the leucocyte count in lobar pneumonia has long been recognised (Table I.). There is both in the natural infection and in the experimental pneumonia of monkeys a sharp initial rise in the numbers of leucocytes followed by a period of low count and a gradual increase towards crisis in the cases that recover. The only correlation of the leucocyte count with the infecting pneumococcal type which I can discover in the literature is that of Clough (1917) who, in 19 cases of Type I. pneumonia, found an average count of 24,000 and in 8 cases of Type III. pneumonia a count of 11,800. She had only 3 Type II. cases. In the present investigation Fleming has carried out daily leucocyte counts in practically all the cases of pneumonia coming into the Glasgow Royal Infirmary for serum treatment (Fig. 4). The effect of the serum, particularly in Type I. cases, is to bring the curve down more quickly, but the chart shows an appreciable difference in the average leucocyte counts of 45 cases of Type I., 32 cases of Type II., and 8 cases of Type III. pneumonia. There is obviously an antileucocytic substance acting most powerfully in Type III. pneumonia, less so in Type II. and least in Type I. infection.

TABLE I

Relation of Leucocytes to Mortality in Pneumonia
(Hospital of the Rockefeller Institute)

Leucocytes.	No. of cases.	Mortality per cent.
Under 10,000	29	65·5
10–20,000	163	23·7
20–30,000	177	18·0
30–40,000	76	14·0

(*c*) *Bacteriæmia.*—A positive blood culture in lobar pneumonia is generally interpreted as prejudicing the patient's chances of recovery—e.g., at the Hospital of the Rockefeller Institute, in 136 cases with positive blood culture, the mortality was 55·8 per cent., and in 312 cases with negative blood culture only 8·3 per cent., and in our own series of non-serum-treated cases 54 patients had positive blood culture with a death-rate of 44 per cent., whereas 184 cases with negative blood culture had a death-rate of 7·6 per cent. However, the prognostic significance of bacteriæmia varies considerably with the different types. Comparing first the proportion of positive blood cultures in lobar pneumonia due to Types I., II., and III. pneumococci (Table II.), we find that the bacteriæmia is actually most frequent in Type I., then in Type II. pneumonia, and least in Type III. pneumonia. Blake's (1931) figures in a recent paper on Type III. pneumonia were 21 positive blood cultures in 116 cases (= 16 per cent.). If we compare these figure with the death-rate ‡ of the different types in lobar pneumonia (Table II., col. 5) mortality would seem to vary inversely with bacteriæmia. Thus Type I. pneumococcus has a greater *invasiveness* and less toxigenicity than Types II. or III. pneumococci.

TABLE II

Relation of Bacteriæmia to Pneumococcal Type and to Mortality in Lobar Pneumonia

Institute.	Type.	No. of cases.	Positive.	Percentage positive.	Percentage mortality of +ve bl. culture.	General death-rate.
G.R.I. and Belvidere Hospital	I.	114	37	32·4	15·0	10·8
	II.	136	34	25·0	52·3	21·5
	III.	8	4	—	100·0	40·9
	Gr. X	71	9	12·6	66·6	8·6
Hospital of Rockefeller Institute.	I.	145	50	34·5	26·0	11·6*
	II.	148	49	33·1	73·4	28·5
	III.	55	16	29·0	100·0	43·0
	Gr. X	100	21	21·0	52·3	12·8

G.R.I. = Glasgow Royal Infirmary. Gr. = group.
* Mostly serum-treated.

If now the death-rate in the different pneumococcal types among those with positive blood culture is examined (Table II., col. 4) it is evident that whereas bacteriæmia is of little prognostic value in Type I. pneumonia, it has a grave significance in Types II., III., and Group "X" pneumonia. However, the absence of bacteriæmia when only one blood culture is done need not necessarily be of favourable import—e.g., of 12 deaths from Type I. pneumonia, 5 had a sterile culture, while 5 out of 17 deaths of Type II. pneumonia had no bacteriæmia. The value of blood culture is increased if daily counts are done (Avery et al. (1917), Sutton and Sevier (1917), Koch (1932)), although the number of organisms per c.cm. of blood which is to be regarded as the danger line is variously given from 5 to 20 by these authors. Blood culture is an essential procedure if only as a check, when positive, on serological typing from the sputum. But as a factor in prognosis, I feel it should not take precedence over the leucocyte count which has the additional asset of being a side-room test.

(*d*) *Toxæmia.*—The measurement of toxæmia must be left largely to the physician. My colleague, Dr. Montgomery, has made a clinical evaluation of toxæmia based on such phenomena as delirium, prostration, headache, incontinence, and pulse pressure. He found that there was no positive correlation between toxæmia and the amount of lung involved, or the degree of dyspnœa and cyanosis. There was some correlation with positive blood culture, with advancing age, and with a history of alcoholism or a positive Wassermann reaction. When correlated with the infecting type, the toxæmia was usually more severe in Type II. infections, the difference from Type I. being particularly noticeable in patients under the age of 35. Using S.S.S. as an indicator of toxæmia, Dochez and Avery found the specific substance present in the urine in 57, 71, and 70 per cent. respectively of cases of Types I., II., and III. pneumonia; of the positive cases, 10 per cent.§ of Type I., 50 per cent. of Type II., and 58 per cent. of Type III. pneumonias died.

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‡ In this lecture, mortality-rate or death-rate means the case-mortality rate. § Mostly serum-treated.

EPIDEMIOLOGY APPLIED TO SCHOOL LIFE *

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Medicine has advanced considerably during our lifetime along certain lines—e.g., medical and surgical treatment—but progress has been slow and erratic in the prevention of infectious disease. We are using to-day practically the same methods of control as when bacteriology and the study of immunity were in their infancy ; the same procedure of notification, isolation, and disinfection as that to which our grandfathers pinned their faith. Yet there is no excuse. for epidemiology, whether statistical, experimental, or field study, has made great advances and we know to-day much more than we did of how infectious diseases are bred, how they behave, the conditions which help or hinder their spread, and how they can be prevented. As members of this association, we are responsible for the health and physical welfare of a number of young people, living a community life and therefore exposed to the forces which govern epidemics. On our study of the laws of epidemiology we have to base our rules for the control of infection in the schools.

Quarantine

Quarantine is the source of all our preventive methods against the spread of infectious diseases. It took its origin from the sea, and the application of its principles was mainly to shipping and the movements of pilgrims and troops from one country to another. The dominating principle in modern as opposed to the older quarantine is that it must be a sieve and not a dam. Its art consists in regulating the openings so as to hold back certain infections, but to permit all else to pass through. In practice, quarantine has failed in the case of droplet-borne diseases, such as influenza, and in diseases such as poliomyelitis where subinfections and carriers are numerous. Diseases, such as small-pox and cholera, against which a solid immunity can be effected ; those, such as pneumonia and plague, in which the disease can be easily identified ; and those transmitted by rats, lice, or mosquitoes are capable of complete control.

Four Interacting Factors

Every epidemic is influenced by the interaction of four variable factors. These are :

1. The reservoir factor,
2. The transmission factor,
3. The infecting factor,
4. The immunity factor,

and the character and progress of the epidemic depend on the dominant factor. This is the basis of C. A. Gill's quantum theory of infectious disease.

Karl Pearson taught (1911) that an epidemic could best be studied by the use of curves, and he introduced the term "*epidemic wave*" in relation to frequency distribution curves. He showed that the number of cases affected in an epidemic rises, more or less rapidly, to a maximum or peak, and then falls with a roughly proportionate rapidity, to the normal or endemic level. J. Brownlee (1905–09), in studying epidemics of small-pox and measles, showed that these waves varied considerably according as to whether the immunity peak was prominent or not. When this was insignificant an epidemic—e.g., variola major—would exhaust itself only after the whole community had been affected ; where the immunity factor was dominant the outbreak either did not occur or came to an end long before the susceptible population had become exhausted. The first phenomenon he describes by a loss of susceptibility curve and the second by a loss of infectivity curve. These phenomena are of particular importance in diseases such as diphtheria and scarlet fever, where the immunity in city populations is very high. It has also been demonstrated that the immunisation of a comparatively small proportion of the population is a powerful preventive in outbreaks of variola major, scarlet fever, and diphtheria.

The dominant factor is that which saves us from epidemics of such diseases as poliomyelitis and cerebro-spinal fever. There are, in an urban community, so many carriers in the population that they keep the immunity potential so high that the virus either does not produce infection or, if it does, only in a very mild and so unrecognised form. This salting of a community continues, provided a certain number of carriers exist in that community. It can be clearly demonstrated in such diseases as scarlet fever and diphtheria, where it can be tested by the Dick and Schick tests. Individuals may be immunised artificially to withstand attacks of these diseases. P. Stocks has shown this immunity to exist in such high velocity diseases as measles and whooping-cough.

Again, S. F. Dudley has shown that apart from immunity an individual has the power of ridding himself of infecting material just as he is capable of becoming infected by it. There is thus set up in a person exposed to a source of infection a struggle between these factors. If the rate of infection is the more rapid the person is finally overcome by a dose of infection capable of affecting his system and so, after a definite period called the incubation period, he will develop the symptoms of the disease. The term "epidemic potential" has been introduced to express the balance between the infectivity of the organism and the susceptibility of the individual or community.

Improved Machinery

The question is how far have we benefited by these discoveries, and in what way we have improved our

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* Abstract of presidential address to the Medical Officers of Schools Association on March 10th, 1933.

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(*Continued from previous page*)

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seriatim with each of these objections, taking the last first.

It is generally agreed that administration of serum is contra-indicated after the fifth day of illness. In an analysis of the day of illness on which the patient was admitted to hospital, in 200 cases of Types I. and II. pneumonia we found that 70 per cent. were admitted within the first four days of infection; a commendable achievement when it is remembered that the cases were mostly derived from the poorer classes.

The value of antiserum in the treatment of Type I. pneumonia is now undoubted. There is less convincing evidence of its efficacy in Type II. pneumonia. Two factors are responsible—the greater severity of the infection and the difficulty of producing a highly potent Type II. antiserum. The first difficulty can be overcome by earlier diagnosis and much more massive dosage, while the production of a potent Type II. antiserum is being tackled by the producers with, I understand, considerable success.

The expense both of producing and refining antipneumococcus serum is very considerable, and the cost of the product cannot commercially be much reduced, even if there is a wider demand for it. This high cost of antipneumococcal serum is a real obstacle to its use by public bodies and practitioners, and it is not particularly creditable to our country that the use of remedies which are to be beneficial to the community should be made almost prohibitive because the production has to be left entirely to the enterprise of commercial firms.

Regarding the specificity of the serum and the need for bacteriological typing, there are two advantages to offset the disadvantage. If we accept the usefulness of Type II. serum and administer primarily a bivalent (Types I. and II.) serum, there are three chances in four of doing good, since about 75 per cent. of the cases of lobar pneumonia in this country are due to Types I. and II. In addition, pneumococcal typing can now be effected in the majority of cases within one to six hours of the diagnosis, either by direct typing from the sputum (Armstrong (1932), Logan and Smeall (1932), Fleming (1933)) or by Sabin's rapid mouse method (Sabin (1929), Cruickshank (1933)). Furthermore, a knowledge of the infecting type is of considerable prognostic value to the physician, whether or not serum is being given. Incidentally, recent work by Day (1933) raises a hope that it may soon be possible to prepare a pan-pneumococcal antiserum.

The results from the serum treatment of lobar pneumonia have been recently and adequately discussed (Cole (1929), Cecil (1932), Park (1930), Cowan, Harrington, et al. (1930, 1932, 1933)). The therapeutic use of a specific antiserum may be expected to result in amelioration of the symptoms, shortening of the infection, and saving of lives. The importance of the first two uses must not be minimised or too much stress laid on the comparative mortality of groups of serum-treated and non-serum-treated cases. Such a comparison is only possible with very large numbers since there are so many variables influencing mortality in pneumonia (see Table III.). Amelioration of the toxæmia is a clinical evaluation—I quote the opinions of experienced physicians. "In Type I. pneumonia the results of serum treatment are excellent; in Type II. pneumonia the effect of serum while not so striking as in Type I. cases is nevertheless definite" (Cecil). "Serum and oxygen should be available for the treatment of pneumonia in every hospital" (Cowan, Harrington, et al.). The shortening of the infection by the use of antiserum in Type I. and less surely in Type II. pneumonia may be most readily appreciated by examination of the temperature charts of a consecutive series of treated patients (see Table IV.). The question is sometimes raised as to whether the serum exercises a non-specific effect such as any foreign protein might do. A considerable number of Group "X" pneumonias in our series were given serum, partly to test this possibility. There was no marked effect either in shortening the infection or in influencing the mortality (Table IV.).

TABLE III

Mortality-rate for Serum-treated and Non-serum-treated Cases of Lobar Pneumonia (Types I. and II.)

Collected—U.S.A. and Britain

Type.	Serum-treated.			Non-serum-treated.		
	Cases.	Deaths.	Mortality per cent.	Cases.	Deaths.	Mortality per cent.
I.	547	94	17·3	477	148	31·0
II.	415	139	33·4	367	159	43·3

TABLE IV

Duration of Pyrexia in Days of Serum-treated and Control Cases of Lobar Pneumonia: aged 15–70 years

—	Serum-treated: G.R.I.	Control cases: Belvidere Hospital.
Type I.	4·7 days (40 cases)	7·6 days (100 cases)
„ II.	6·6 „ (40 „)	7·7 „ (100 „)
Group X	6·3 „ (38 „)	7·5 „ (60 „)

Summary

The serological determination of the pneumococcal type in lobar pneumonia has in the past been regarded more of academic interest to the bacteriologist than of practical importance to the clinician. In the foregoing lecture I have tried to indicate that, apart altogether from serum treatment, a knowledge of the type of infecting pneumococcus is of considerable prognostic value. Quantitative as well as qualitative differences in the capsular or specific soluble substance of Types I., II., and III. pneumococci have been shown to exist, and the intimate association of the pneumococcal soluble specific substance with the degree of toxæmia has been stressed as explanation of the difference in the severity and mortality of Types I., II., and III. pneumonia. Because of the antileucocytic effect of this substance the leucocyte count is believed to be as valuable in prognosis as the presence or absence of bacteriæmia. Infection is overcome naturally by a general humoral antibody response. It may be considerably shortened in Type I. pneumonia and less surely in Type II. pneumonia by the use of specific antipneumococcal serum.

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EPIDEMIOLOGY APPLIED TO SCHOOL LIFE*

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MEDICINE has advanced considerably during our lifetime along certain lines—e.g., medical and surgical treatment—but progress has been slow and erratic in the prevention of infectious disease. We are using to-day practically the same methods of control as when bacteriology and the study of immunity were in their infancy ; the same procedure of notification, isolation, and disinfection as that to which our grandfathers pinned their faith. Yet there is no excuse, for epidemiology, whether statistical, experimental, or field study, has made great advances and we know to-day much more than we did of how infectious diseases are bred, how they behave, the conditions which help or hinder their spread, and how they can be prevented. As members of this association, we are responsible for the health and physical welfare of a number of young people, living a community life and therefore exposed to the forces which govern epidemics. On our study of the laws of epidemiology we have to base our rules for the control of infection in the schools.

Quarantine

Quarantine is the source of all our preventive methods against the spread of infectious diseases. It took its origin from the sea, and the application of its principles was mainly to shipping and the movements of pilgrims and troops from one country to another. The dominating principle in modern as opposed to the older quarantine is that it must be a sieve and not a dam. Its art consists in regulating the openings so as to hold back certain infections, but to permit all else to pass through. In practice, quarantine has failed in the case of droplet-borne diseases, such as influenza, and in diseases such as poliomyelitis where subinfections and carriers are numerous. Diseases, such as small-pox and cholera, against which a solid immunity can be effected; those, such as pneumonia and plague, in which the disease can be easily identified ; and those transmitted by rats, lice, or mosquitoes are capable of complete control.

Four Interacting Factors

Every epidemic is influenced by the interaction of four variable factors. These are :

1. The reservoir factor,
2. The transmission factor,
3. The infecting factor,
4. The immunity factor,

and the character and progress of the epidemic depend on the dominant factor. This is the basis of C. A. Gill's quantum theory of infectious disease.

Karl Pearson taught (1911) that an epidemic could best be studied by the use of curves, and he introduced the term "*epidemic wave*" in relation to frequency distribution curves. He showed that the number of cases affected in an epidemic rises, more or less rapidly, to a maximum or peak, and then falls with a roughly proportionate rapidity, to the normal or endemic level. J. Brownlee (1905–09), in studying epidemics of small-pox and measles, showed that these waves varied considerably according as to whether the immunity peak was prominent or not. When this was insignificant an epidemic—e.g., variola major—would exhaust itself only after the whole community had been affected ; where the immunity factor was dominant the outbreak either did not occur or came to an end long before the susceptible population had become exhausted. The first phenomenon he describes by a loss of susceptibility curve and the second by a loss of infectivity curve. These phenomena are of particular importance in diseases such as diphtheria and scarlet fever, where the immunity in city populations is very high. It has also been demonstrated that the immunisation of a comparatively small proportion of the population is a powerful preventive in outbreaks of variola major, scarlet fever, and diphtheria.

The dominant factor is that which saves us from epidemics of such diseases as poliomyelitis and cerebro-spinal fever. There are, in an urban community, so many carriers in the population that they keep the immunity potential so high that the virus either does not produce infection or, if it does, only in a very mild and so unrecognised form. This salting of a community continues, provided a certain number of carriers exist in that community. It can be clearly demonstrated in such diseases as scarlet fever and diphtheria, where it can be tested by the Dick and Schick tests. Individuals may be immunised artificially to withstand attacks of these diseases. P. Stocks has shown this immunity to exist in such high velocity diseases as measles and whooping-cough.

Again, S. F. Dudley has shown that apart from immunity an individual has the power of ridding himself of infecting material just as he is capable of becoming infected by it. There is thus set up in a person exposed to a source of infection a struggle between these factors. If the rate of infection is the more rapid the person is finally overcome by a dose of infection capable of affecting his system and so, after a definite period called the incubation period, he will develop the symptoms of the disease. The term "epidemic potential" has been introduced to express the balance between the infectivity of the organism and the susceptibility of the individual or community.

Improved Machinery

The question is how far have we benefited by these discoveries, and in what way we have improved our

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* Abstract of presidential address to the Medical Officers of Schools Association on March 10th, 1933.

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seriatim with each of these objections, taking the last first.

It is generally agreed that administration of serum is contra-indicated after the fifth day of illness. In an analysis of the day of illness on which the patient was admitted to hospital, in 200 cases of Types I. and II. pneumonia we found that 70 per cent. were admitted within the first four days of infection; a commendable achievement when it is remembered that the cases were mostly derived from the poorer classes.

The value of antiserum in the treatment of Type I. pneumonia is now undoubted. There is less convincing evidence of its efficacy in Type II. pneumonia. Two factors are responsible—the greater severity of the infection and the difficulty of producing a highly potent Type II. antiserum. The first difficulty can be overcome by earlier diagnosis and much more massive dosage, while the production of a potent Type II. antiserum is being tackled by the producers with, I understand, considerable success.

The expense both of producing and refining antipneumococcus serum is very considerable, and the cost of the product cannot commercially be much reduced, even if there is a wider demand for it. This high cost of antipneumococcal serum is a real obstacle to its use by public bodies and practitioners, and it is not particularly creditable to our country that the use of remedies which are to be beneficial to the community should be made almost prohibitive because the production has to be left entirely to the enterprise of commercial firms.

Regarding the specificity of the serum and the need for bacteriological typing, there are two advantages to offset the disadvantage. If we accept the usefulness of Type II. serum and administer primarily a bivalent (Types I. and II.) serum, there are three chances in four of doing good, since about 75 per cent. of the cases of lobar pneumonia in this country are due to Types I. and II. In addition, pneumococcal typing can now be effected in the majority of cases within one to six hours of the diagnosis, either by direct typing from the sputum (Armstrong (1932), Logan and Smeall (1932), Fleming (1933)) or by Sabin's rapid mouse method (Sabin (1929), Cruickshank (1933)). Furthermore, a knowledge of the infecting type is of considerable prognostic value to the physician, whether or not serum is being given. Incidentally, recent work by Day (1933) raises a hope that it may soon be possible to prepare a pan-pneumococcal antiserum.

The results from the serum treatment of lobar pneumonia have been recently and adequately discussed (Cole (1929), Cecil (1932), Park (1930), Cowan, Harrington, et al. (1930, 1932, 1933)). The therapeutic use of a specific antiserum may be expected to result in amelioration of the symptoms, shortening of the infection, and saving of lives. The importance of the first two uses must not be minimised or too much stress laid on the comparative mortality of groups of serum-treated and non-serum-treated cases. Such a comparison is only possible with very large numbers since there are so many variables influencing mortality in pneumonia (see Table III.). Amelioration of the toxæmia is a clinical evaluation—I quote the opinions of experienced physicians. "In Type I. pneumonia the results of serum treatment are excellent; in Type II. pneumonia the effect of serum while not so striking as in Type I. cases is nevertheless definite" (Cecil). "Serum and oxygen should be available for the treatment of pneumonia in every hospital" (Cowan, Harrington, et al.). The shortening of the infection by the use of antiserum in Type I. and less surely in Type II. pneumonia may be most readily appreciated by examination of the temperature charts of a consecutive series of treated patients (see Table IV.). The question is sometimes raised as to whether the serum exercises a non-specific effect such as any foreign protein might do. A considerable number of Group "X" pneumonias in our series were given serum, partly to test this possibility. There was no marked effect either in shortening the infection or in influencing the mortality (Table IV.).

TABLE III

Mortality-rate for Serum-treated and Non-serum-treated Cases of Lobar Pneumonia (Types I. and II.)

Collected—U.S.A. and Britain

Type.	Serum-treated.			Non-serum-treated.		
	Cases.	Deaths.	Mortality per cent.	Cases.	Deaths.	Mortality per cent.
I.	547	94	17·3	477	148	31·0
II.	415	139	33·4	367	159	43·3

TABLE IV

Duration of Pyrexia in Days of Serum-treated and Control Cases of Lobar Pneumonia: aged 15–70 years

—	Serum-treated: G.R.I.	Control cases: Belvidere Hospital.
Type I.	4·7 days (40 cases)	7·6 days (100 cases)
„ II.	6·6 „ (40 „)	7·7 „ (100 „)
Group X	6·3 „ (38 „)	7·5 „ (60 „)

Summary

The serological determination of the pneumococcal type in lobar pneumonia has in the past been regarded more of academic interest to the bacteriologist than of practical importance to the clinician. In the foregoing lecture I have tried to indicate that, apart altogether from serum treatment, a knowledge of the type of infecting pneumococcus is of considerable prognostic value. Quantitative as well as qualitative differences in the capsular or specific soluble substance of Types I., II., and III. pneumococci have been shown to exist, and the intimate association of the pneumococcal soluble specific substance with the degree of toxæmia has been stressed as explanation of the difference in the severity and mortality of Types I., II., and III. pneumonia. Because of the antileucocytic effect of this substance the leucocyte count is believed to be as valuable in prognosis as the presence or absence of bacteriæmia. Infection is overcome naturally by a general humoral antibody response. It may be considerably shortened in Type I. pneumonia and less surely in Type II. pneumonia by the use of specific antipneumococcal serum.

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In both types of the disease adequate drainage, with the resulting increase in oxygen tension of the part affected, and massive dosage with iodides appear to give the best results.

Prognosis depends upon the anatomical site of the lesion and early recognition of the disease.

My thanks are due to the surgical staff of the London Hospital for permission to publish these cases, and especially to Mr. Hugh Cairns, who was in charge of the isolation block at the time of the investigation. I am also indebted to Dr. Paul Fildes for his advice on the bacteriology, and to Prof. H. M. Turnbull for permission to make use of the post-mortem records, and for his advice.

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THE GRASS-POLLEN ANTIGEN FOR HAY-FEVER DESENSITISATION

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I.—POLYVALENCY

WHEN in 1908 the late Leonard Noon and I began experiments to see if inoculated doses of a grass-pollen extract would in any way modify (or might even cure) hay-fever symptoms, we were naturally faced with the problem whether the extract from any grass-pollen would do, or whether we ought to get extracts from a number of the grasses, and if so, which of them? This was a vital point because there are 41 genera, 108 species, and innumerable varieties of grasses in the British Isles alone. The pollen of any one of them will fly for 30 or 40 miles on a brisk summer breeze, therefore the air-passages of any hay-fever patient must in the course of nature be subjected to the action of a great variety of grass-pollens.

EXPERIMENTS ON GRASS-POLLEN

First phleum testing (1908).—To settle this point we tested a number of hay-fever subjects with three extracts from different grass-pollens—namely, *Phleum pratense*, *Alopecurus pratensis*, and *Poa annua*. We argued that if these three grasses did contain different antigens, presumably some patients would react to one and others would react to another; or at least it might be presumed that one of these pollens would react more strongly on some of the patients, while another pollen would react more strongly on others. As a fact, we found that if any patient was sensitive to one he was sensitive to all three, and that with these particular extracts the strongest reaction was always given by phleum, the next strongest by alopecurus, and the least by poa. Arguing from these three pollens to all grass-pollens, we decided that phleum would serve as an antigen to all hay-fever cases—i.e., it was immunologically "polyvalent." So we used phleum.

A year or two later, after the untimely death of Noon, I corresponded with Dunbar, of Hamburg, who informed me that he was using rye pollen as an antigen, and very courteously sent me a supply. Testing this against *Phleum pratense* I came to the conclusion that they contained the same antigen.

Second phleum testing (1920).—In the course of years other workers entered this field of investigation and many of them advised that patients should be tested to see to which particular grass they were sensitive, thinking that variety of sensitisations might account for failures in treatment when using phleum alone. Also it was thought by them that the differing cutaneo-reactions of the various grasses indicated differing antigens. The old problem was therefore re-examined in my laboratory soon after the war, with the amplification of the experiment by two new pollens, *Dactylis glomerata* and *Anthoxanthum oderatum*. Again it was found that if any patient reacted to one he reacted to all grass-pollens; and, within the limits of accuracy of the experiment, no particular grass-pollen gave a relatively strong reaction with one patient and a relatively weak reaction with another patient. It was also observed that cured patients—i.e., those who had previously been (for therapeutic purposes) heavily inoculated with *Phleum pratense* for several years and who had thereby lost their reaction to phleum—had lost their reaction also to the other grasses. This result might have been anticipated, because they could not have been cured unless they had failed to react spontaneously in response to all the varieties of grass-pollen grains that the atmosphere might send them during the hay-fever season. Thus the polyvalency of phleum seems to be reaffirmed.

Third phleum testing (1932).—However, writers of books and papers on hay-fever continued to suggest that it was desirable to test the patient to a variety of grasses.[1] One such writer stated that holcus and dactylis certainly yielded different antigens from that which could be extracted from *Phleum pratense*. I therefore decided to make another and more elaborate testing, and to test especially these two suspect grasses.

During the summer of 1931, beside the customary pollen from phleum, pollen from seven other grasses was collected and extracted for testing purposes, and a special quantity of dactylis and holcus was collected for heavy immunisation. Work during 1932 showed that no hay-fever patient who reacted to any *one* of these pollens failed to react to all eight of them; and, within the limits of the experiment the more powerful pollen extracts reacted powerfully on all, the less powerful reacted less powerfully on all. Thus our original experiment was confirmed again. Furthermore, it was observed that heavy desensitisation with extracts of phleum, dactylis, or holcus, or with any combination of these three, when carried far enough, not only reduced and finally obliterated the skin reactions to the particular pollen that was being used as an antigen, but abolished them to all the other pollens also. All this is shown graphically in the accompanying Figure. This result was found whenever the doses were carried high enough, and was supplemented by the fact that any patient whose skin reactions had wilted under the influence of massive doses of any of these three antigens suffered no trace of symptoms from the naturally occurring pollen-cloud at midsummer.

One further test I am still carrying out which bears on the polyvalency of phleum, &c., and that is to see how rapidly the various skin reactions return after they had become obliterated by treatment last spring or summer. So far as I have had time to test, the skin reactions from no one of the pollens returns more quickly or more slowly than the others do.

If there is any difference of antigen between the different grasses it has not been detected by me, and

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[1] The extracts used for these tests usually come from U.S.A.; it should have caused misgivings that occasionally the species of grass selected in this way for use as the antigen "because it causes most of the mischief" is only to be found on the other side of the Atlantic.

Both the thoracic cases were characterised by a steady spread of the disease in spite of treatment. Subcutaneous abscesses appeared, and one patient showed at one time 14 abscesses, all about 1½ in. in diameter, over the lower part of the back. In the same patient the streptothrix was present in the sputum.

POST-MORTEM RECORDS

Owing to the chronicity of the disease patients suffering from actinomycosis are frequently discharged from hospital before death. For this reason post-mortem records were available in only one of the five deaths in this series (No. 9 in the following summary). Therefore, in order to investigate the mode of death in actinomycosis an examination was made of the pathological records of patients dying from the disease prior to this series. The following are extracts from these records. The first eight cases represent the deaths which occurred in the London Hospital over a period of four years.

CASE 1 (1912).—Actinomycotic pyæmia. Abscess (1 cm. diam.) in ileocæcal valve. A few small submucosal abscesses in ascending colon. Thin pus and organising fibrin throughout peritoneum. Purulent thrombosis of right branch of portal vein. Fibrotic honeycomb abscess in right lobe, and a few discrete abscesses in left lobe of liver. Small subpleural abscesses in all lobes of lungs. Inflamed spleen. Operation: appendicectomy four days before. Appendix 4·5 cm. long; fibrotic obliteration of lumen in distal 2 cm.

CASE 2 (1912).—Actinomycotic pyæmia. Submucous abscesses in cæcum, last inch of ileum, ascending colon, hepatic flexure, and jejunum adherent thereto. Chronic abscesses in right iliac and lumbar muscles. Focal purulent peritonitis in right iliac fossa. Large groups of abscesses in right lobe of liver. A few subpleural miliary abscesses in lower lobe of right lung. Grey-red inflamed spleen. Operation: appendicectomy three months before, "appendix found in hard tangle of adherent growth." Appendix with focal constriction by fibrous scar of mucosa and submucosa.

CASE 3 (1912).—Actinomycotic pyæmia. Large submucous hæmorrhagic areas and a few small ulcers in cæcum. Numerous submucous hæmorrhagic abscesses throughout colon and in lower 18 in. of ileum. Hæmorrhagic cellulitis of bed of cæcum. Abscess in right psoas and iliacus. General organising fibrino-purulent peritonitis. Subpleural purulent inflammation in base of lower lobe of right lung. Rounded group of walled abscesses (largest 3 cm. diam.) in right lobe of liver. Abscess within and purulent infiltration of bed of right suprarenal body. Submiliary abscesses in left kidney. Miliary abscess in apex of urinary bladder. No enlargement of spleen (3½ oz.). Operation: appendicectomy three months before. Actinomycotic granulation tissue found in peritoneum at site of appendix.

CASE 4 (1912).—Actinomycotic pyæmia and lardaceous disease. Right psoas and iliacus riddled with abscesses. Extraperitoneal pelvic abscess. Large abscess in left psoas. Pus in right hip-joint. Cutaneous sinuses in right groin and appendix region. Submucous abscess in ileum 2 in. above termination; close to this a perforation of ileum into retroperitoneal tissues. Focal fibrino-purulent peritonitis in right iliac region and pelvis. Scar in cæcum of appendicectomy. Miliary subpleural abscesses throughout both lungs. Abscess in spleen. General amylosis of liver and suprarenal bodies. Sago-waxy spleen. Operation: appendicectomy ten months before.

CASE 5 (1912).—Actinomycotic septicæmia. Hæmochromatosis. Fibrous scar in proximal end of appendix. Peritoneal adhesions round appendix and cæcum. Numerous groups of actinomycotic abscesses in liver. Reticular fibrosis and great hæmosiderosis of liver. Deep blue pigmentation of lymphoid tissue throughout intestines. Slight chronic inflammation and extensive hæmosiderosis of spleen.

CASE 6 (1913).—Actinomycotic cerebro-spinal meningitis. Purulent infiltration and destruction of tissues in right false pelvis, extending to and involving the right lobe of the diaphragm and the lumbosacral vertebral muscles. Purulent erosion of posterior surface of bodies of third, fourth, and sixth lumbar vertebræ. Extrathecal pus in lumbosacral portion of spinal canal. Thick gelatinous pus in subarachnoid space of cord and brain. Slight chronic inflammation of spleen.

CASE 7 (1915).—Actinomycotic septicæmia. Perforated ulcer (1·2 cm. diam.) in cæcum. Abscess in right false pelvis. Almost complete destruction of right iliacus muscle. Small abscess in adherent fimbriæ of right Fallopian tube. General organising fibrinous peritonitis. Direct extension of abscess from right false pelvis under Poupart's ligament and over lesser trochanter of femur into thigh. Abscesses in intermuscular septa of outer surface of right thigh and leg. Red, diffluent inflamed spleen. Operation: appendicectomy 13 days before.

THORACIC TYPE

CASE 8 (1913).—Death during anæsthesia. Acute superimposed on chronic rheumatic endocarditis. Actinomycotic abscess in muscles of back from right ninth to twelfth ribs, and in subcutaneous tissues from ninth rib to right iliac crest. Purulent infiltration and great thickening of retropleural tissue from fourth rib to first lumbar vertebra. Dense adhesion between pleuræ over postero-inferior angle of lower lobe of right lung. Purulent infiltration of subjacent lung to depth of 1·5 cm. Grey inflamed spleen. Operation wound exposing eleventh right rib.

CASE 9 (1928).—Heart failure. Actinomycotic pericarditis. Area of fibrosis (2 × 1·5 cm.) containing multilocular abscess (1 cm. diam.) in centre of anterior margin of upper lobe of left lung. Area (8·5 × 5 × 4 cm.) of organising purulent broncho-pneumonia in lower part of anterior margin of upper lobe of right lung. Continuous with these a dense fibrosis containing chronic abscesses in the anterior mediastinum below level of fourth rib. Extension of dense fibrosis with more recent abscesses to the intercostal and subcutaneous tissues from the second to fifth costal cartilages and to the pericardium. Surface of superjacent skin studded with ulcers exuding pus. Numerous minute and one large abscess (9 × 5 cm.) in thickened adherent pericardium. Œdematous "back pressure" spleen.

It will be seen from these pathological findings that actinomycosis causes death in three ways: (1) by direct extension to and destruction of vital structures; by (2) generalised pyæmia; or by (3) amyloid disease. Although the gut was perforated in two cases, there was never fæcal peritonitis, and perforation was never a cause of death.

It is commonly stated that the lymphatic glands are not affected in this disease (Zachary Cope). That the glands do become infected is shown by the two sternomastoid cases quoted above. But the lymphatic glands do appear to be resistant and in most cases unaffected.

Spread of the disease takes place in two ways: at first by direct extension alone, and later, when abscess cavities have formed, by the blood stream. The degree of spread possible by direct extension alone is well illustrated in Case 6. It must be emphasised that these methods of spread apply to the deep variety only. In the superficial cases extension is slow, and infection by the blood stream with the formation of "metastatic" abscesses does not occur.

CONCLUSIONS

Human actinomycosis appears to be invariably an infection with the non-acid-fast anaerobic streptothrix *A. bovis.* The superficial variety of actinomycosis occurs more commonly than is usually supposed. In cervico-facial cases, before the formation of pus, trismus is the most important sign.

Early diagnosis by a bacteriological examination of pus in all cases of alveolar abscess and early treatment with iodides will prevent the terrible scarring and repeated relapses associated with the disease. If a test-tube containing actinomycotic pus is tilted the granules are visible to the naked eye as greenish-grey specks adhering to the glass. Even, therefore, when a routine bacteriological examination of all pus is impossible, this method of tilting the test-tube and examination through a hand lens would indicate the suspicious cases which need fuller investigation. In the deep variety there is such a high mortality that a routine bacteriological examination of pus in cases of empyema, appendix abscess, and subdiaphragmatic abscess is imperative. Where cases are allowed to suggest the disease by their very chronicity the disease has usually spread beyond human aid.

places, we might hope to lower considerably the mortality in pyogenic infections. The treatment of the following cases was founded on this conception. I do not intend here to advocate the use of this treatment, but to discuss points in the pathology of the condition on which the cases throw some light.

No special merit can be claimed for four successive recoveries, even in severe cases of this infection; recoveries may follow almost any treatment. The point is that these cases, in addition to the appropriate surgical treatment, were given benzol by mouth. Benzol has the effect of diminishing the blood-cells, especially the leucocytes, and was given with that express purpose.

Following the life-work of Metchnikoff on phagocytosis, and the further work of Sir Almroth Wright and his school on the opsonic and bactericidal factors of the blood, so much has been said and written on the protective value of the leucocytes in infections that it will be difficult to carry conviction in explaining the rationale of a therapy that seeks to limit leucocytosis during a pyogenic infection. A simile may help. The Bishop of Oxford has lately quoted Mr. Charles Dodgson (Lewis Carroll) as asking the following question of his mathematical students: "If three men can build 10 yards of wall in so many days, how long will it take 300,000 men to build it?" The answers in theory and practice are clearly very different, and it must often happen that 300,000 leucocytes are crowded into a spot where only a very small number could possibly be of use. Wright[1] himself points out that from a practical point of view normal blood contains phagocytes "far in excess of any conceivable requirements."

We are considering here the apparently excessive degree of leucocytosis that infection may cause. An example is seen in scarlet fever, which is to-day a much milder disease than formerly, since, as Prof. Okell[2] points out, the streptococcus in scarlet fever is now less pyogenic and invasive, and more toxigenic. The idea that disease as we recognise it is, in many cases, chiefly the reaction to infection is no new one; it must go back at any rate to the time of Sydenham, and morbid anatomists especially are driven to feel that the patient quite often dies from the violence of his reaction rather than from the virulence of the infection. In some conditions, such as hyperpyrexia for instance, we do not hesitate to limit Nature's activities, and the question raised here is whether in some markedly pyogenic infections we ought not to try to limit the excessive leucocytosis with its attendant localisation and abscess formation.

INFECTING AGENT AND LEUCOCYTIC RESPONSE

For all practical purposes the infecting agent is the staphylococcus, almost always *S. aureus*. This organism may be very virulent and may cause an acute toxæmia, sometimes rapidly fatal, but, as a rule, in its less acute rôle of pyogenic agent, it leads to the formation of local bone abscess and later to embolic abscesses.

On opening the bone in an early case the surgeon may find no pus, but bright red and bleeding marrow, and may doubt whether he has opened at the right spot. The fragment of bone removed in such cases should always be cultured; a fragment of the marrow laid on agar will often grow *S. aureus* abundantly. The infecting agent is present, and from the clinical signs is causing a marked toxic effect, but as yet there is no pus; the organisms are highly virulent and are not exerting a positive chemotactic influence on the leucocytes. If an effective phagocytosis could take place at this stage it would be of the highest value, but unfortunately it is not a function of the leucocyte to take up and digest such highly virulent organisms. At this time the blood picture may show no marked change from the normal.

After surgical intervention the fever usually begins to fall or to intermit, pus comes from the wound, and the blood count rapidly rises, in favourable cases perhaps to about 15–20,000 and, in spite of a positive blood culture in the early stages, the patient may steadily progress towards cure. In other cases, in which the cell count commonly rises higher, the second phase of the disease proceeds with the formation of a series of collections of pus in one site and another. The surgeon now adopts an attitude of tempered optimism, for he rightly feels, in severe cases, that localisation of pus is associated with a better prognosis than is a pure staphylococcal septicæmia. Why is this? A current view is that the leucocytes have now arrived at infected spots in such numbers that the foe may be expected soon to be vanquished. But we have already seen that when the organism is really virulent there is no leucocytic or phagocytic response, and thus, if we choose, we can take as an alternative explanation that the virulence or toxicity of the organism has diminished, or has been relatively diminished by the development of some form of immunity, and for that reason the bacteria now exert a positive chemotaxis, and a leucocytic response with phagocytosis follows. Thus we arrive at the conclusion that the patient is not now likely to be killed by the toxic virulence of the infecting organism, as seemed possible in the early stages. But we know he may yet die from the fortuitous collections of pus, and especially from purulent emboli in which leucocytes and blood-platelets play a large part.

On the basis of this view it will not be unreasonable if we attempt to check this excessive reaction. Two questions now arise: (1) is it possible to control the leucocytic response in spite of the infection? and (2) if we produce a relative leucopenia, will the infection be correspondingly exaggerated?

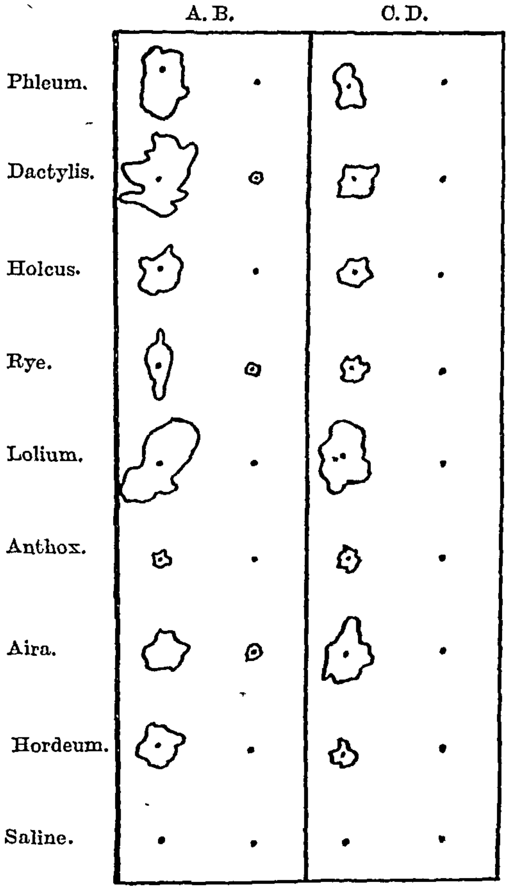
(1) *Is it possible to control leucocytosis in the active stages of a pyogenic infection?* It is certain that benzol is at the best a slow and clumsy agent for this purpose; in normal rabbits at any rate I have found it extremely difficult to produce a leucopenia with benzol, and it is impossible to say from these few cases how far it did act as a controlling agent. On the other hand, experience of blood counts of numerous untreated cases makes it practically certain that it did act in this way. What is certain is that in three of these cases there was in the later stages a degree of leucopenia with an increasingly watery rather than purulent discharge whilst the infection was still relatively active. In the fourth case a very profound leucopenia had developed by the fifth week in spite of the presence of a new infection with a pyogenic organism in the pleural cavity.

(2) *Is there any evidence that an infection becomes exaggerated in leucopenic conditions?* It is common knowledge that a leucopenia is associated with the most severe and toxic infections and that such infections tend to a fatal result. Agranulocytic angina, the worst cases of pneumonia, and very severe cases of typhoid fever are typical examples. It is a tempting assumption that these cases are severe because of the leucopenia, but experimental evidence shows that a leucopenia is definitely the effect of a heavy dose of bacterial toxin, and phagocytosis of such highly toxic bacteria would probably not be effected even if leucocytes were present in abundance. It is claimed by Camp and Baumgartner[3] that a local pyogenic reaction to infection occurs

it certainly seems not only permissible but the only practical course to regard all the grass-pollen antigens as one. Pollen from any one of these grasses is therefore polyvalent and is sufficient for treatment of hay-fever.

POLLEN-FEVER IN SUMMER, AUTUMN, AND WINTER

Pollen-fever from the flowers in summer.—Perhaps, to clear up the question of diversity of pollen antigens, I may here deal briefly with sensitisations to pollens other than grass. Of course a number of hay-fever patients, and more in the old days than now perhaps, put down their troubles to some conspicuous or heavily scented flower which happened to bloom during the time of the grass-pollen cloud—"It is only the syringa that affects *me*" or "My hay-fever begins directly the may blossom is out, so it must be that." It is true that there is a difference of sensitisation between the grass-pollens and the pollens of what are popularly called flowers. Some hay-fever subjects will react to hardly any of the flower pollens, while most will react in varying degree to an apparently capricious assortment of them. There are in fact flower-pollen "diseases" running parallel but not identical with true hay-fever, but for a variety of reasons[3] which I will not detail again here, it is unlikely that any conspicuous or heavily scented flower can give much trouble, even to a person who happened to be sensitive to it; and I am doubtful if I have ever come across a case of reputed hay-fever which can really be ascribed to some midsummer flower or flowers.



Urticarial weals given by prick-reactions at the beginning and end of treatment in two cases of hay-fever last year. Note that each case before treatment reacts to all eight grass-pollens employed, and that though they were inoculated with only one of the pollens (*Phleum pratense*) they lost the reactions to all the eight after treatment. A. B., who was first tested on May 24th, with a dose of 40, had only a fortnight's treatment quickened by a "rush"[2] in the middle of it; the second test was on June 8th, when the dose was 20,000. C. D.'s first test was on Feb. 10th, when the dose was 20, and he had four months—chiefly by self-inoculation—before the second test, with 50,000, on June 15th. Both experienced complete relief from hay-fever.

Pollen-fever from the trees in late winter.—Many of the big trees pollinate at the end of the winter. In America, to judge by the literature, there is a definite so-called hay-fever season at that time of year from this cause. Here in England I think I have come across two or three cases with symptoms derived from tree pollination in February, but the symptoms have never been severe enough to make it worth tackling immunologically.

Pollen-fever from compositæ in autumn.—In the autumn, in the "fall" as they say, they have in both Canada and U.S.A. a so-called hay-fever due to the pollen of lowly organised compositæ, and by common consent in America this fever in September and October is much worse than their midsummer trouble due to grass-pollen—i.e., is worse than true hay-fever.

The actual antigen of this autumn disease varies apparently in different places, but opinions in America have hardened in the direction of *Ambrosia trifida*, popularly called ragweed, which is a wind-fertilised composite. Fortunately this genus is not to be found on this side of the Atlantic (usually not even in the botanical gardens because it is an ugly plant). Let us hope no foolish person introduces it into our countryside for fun. I have come across a number of cases (a couple of dozen maybe) that get an autumn fever due to the pollen of compositæ; certainly in some cases, and so far as I know almost invariably, this is derived from the Michaelmas daisies which flower at the end of September and beginning of October. I have made an extract from this pollen and find it works well in such cases; but usually it is easier for patients to avoid the Michaelmas daisies.

CONCLUSION

Taking it all round, in England the true hay-fever due to grass-pollen is a hundred times more important than all the other pollen fevers rolled into one.

Extracts from all the various grass-pollens furnish one and the same antigen for purposes of desensitisation to hay-fever.

The question of dosage will be discussed in a second part of this article.

SOME ASPECTS OF THE PATHOLOGY OF PYÆMIC CONDITIONS

BASED ON A STUDY OF FOUR CASES OF SEVERE ACUTE OSTEOMYELITIS TREATED WITH BENZOL

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PYÆMIA is common in severe cases of acute osteomyelitis. The prognosis depends mainly on the site and accessibility of the secondary abscesses; in other words, provided the patient survives the first few days, the outlook is related to the condition of pus-formation rather than to the actual toxic virulence of the infective agent. It seems reasonable, therefore, to suggest that if we could check the formation of pus, at any rate in difficult and dangerous

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[2] THE LANCET, 1930, i., 744.

[3] *Proc. Roy. Soc. Med.*, 1920, xiii., 8.

CASE 3.—A boy of 12 years. Infection of the lower end of the femur. Count at time of first operation: 15,000. Case put on benzol ♏ 10, t.d.s., at once. Count rose in the next five days to 23,000, fell again to 10,000 in a further five days, and then to 5000 in a further 15 days. Taken off benzol. The count continued gradually to fall during the next 30 days to 4000. During this time, as the temperature remained irregular and the count under 5000, the bone was guttered, without ill-effects. The count gradually rose to about 10,000 during the next three weeks and the patient became convalescent. During the two and a half years since leaving hospital three residual subcutaneous abscesses have formed and been opened. His general health has been excellent.

CASE 4.—A boy of 5 years. Infection of upper end of tibia. Early operation, no pus, *S. aureus* grown from bone-marrow. White cell count at operation: 12,500; rose to 35,000 on third day. Benzol ♏ 5, t.d.s. for ten days, when the count had fallen again to 12,500. Twelve days later the count had fallen to 5000, and in a further three weeks to 1000, with 50 per cent. polymorphonuclear leucocytes. It gradually rose in the next ten weeks to 8500. Very little in the way of secondary abscesses formed, but at the time the count was down to 1000. A large effusion in the chest was drawn off. The fluid was clear and contained practically no cells, but large numbers of pneumococci were present. Fluid was also present in the pericardium and peritoneum.

A fifth patient died 24 hours after treatment with benzol was started, and is not included in the series.

EFFECTS OF TREATMENT

Treatment of these cases with benzol was adopted with the object of preventing metastatic abscesses; can it be said to have been effective? If a purulent reaction to infection occurs, as Camp and Baumgartner[3] claim, unless the white count is reduced below 1000 cells per c.mm. it is clear that only in the later stages of the last case could we have hoped to achieve that end and completely abolish suppuration. It is not even certain that the degree of abscess-formation will be proportionate to the number of leucocytes in the circulation, since extensive cold abscesses may occur with quite low cell counts, though of course they are a long while accumulating. It is, however, likely that the number of abscesses formed will be fewer and their development less progressive as the white cell count falls. We can put on one side for the present the question of leukæmic states of the blood for, while it is true that there seems no tendency to excessive purulent reaction to infection in myeloid leukæmias, even when an enormous excess of adult polymorphonuclear leucocytes is present, it is equally true that in lymphatic leukæmias, when polymorphonuclear leucocytes may be practically absent, there seems no marked tendency for bacterial infections to take hold and spread unchallenged.

Exactly what would or would not have happened in these cases if benzol had not been given it is impossible to say, but in three of them a definite note was made that the discharge from the wounds quickly became less purulent as the count fell and in the last case of the series pneumococci were present in a serous pleural fluid which was practically clear of cells.

SUMMARY

Four cases of acute osteomyelitis with septicopyæmia were treated with benzol with the object of diminishing the leucocytic reaction. In three of them there was a marked fall in the white cell count, and in the fourth a profound leucopenia set in. The purulent discharge diminished and became more watery. The patients all recovered and no after-effects of the benzol have been noted. (The most recent of the cases quoted was two years ago.) It is claimed that in these cases there was an artificial restriction of the output of leucocytes in the later stages of the disease and that this was an advantage rather than the contrary. Though a consideration of the part played by leucocytes and their products in immunity is omitted, it will be seen that a leucocytosis and localisation of pus is represented here as an index rather than as a necessary adjunct of immunity.

The object of the paper is not to advocate benzol as a method of curing pyæmia but to consider whether in this condition we ought not to seek for a direct method of preventing the over-production of leucocytes and their localisation into abscesses.

My thanks are due to my surgical colleagues for their consideration of the point of view set forth in this paper, and their courage in adopting an apparently reactionary treatment.

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MAGNESIUM SULPHATE IN THE TREATMENT OF ANGIOSPASM

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SPASTIC conditions of the arterial wall, in the light of our inadequate knowledge of vascular disease in the living human body, may be roughly divided into two groups. The first includes hypertonus of the arterial wall of the large and medium-sized vessels, usually but not necessarily associated with arterial hypertension.[1 2] It is probably toxic in origin, and its classical example is the vascular picture in chronic interstitial nephritis. Our only method—a very imperfect one—of diagnosing hypertonus is by palpation of the vessels. The second group consists of angiospasm. It may affect any part of the arterial tree right down to the capillaries. The veins are not affected because of the weakness of their muscular wall, although there is abundant evidence that they too are submitted to the influence of the vasomotor system.

Hypertonus of long standing is injurious in itself, but it also leads either to atheromatous degeneration of the intima or to vascular spasm. The only defensive reaction of the artery to a stimulus being its contraction, it is easy to appreciate that spasm of the vessels may be brought on by many factors. The most essential are:—

(1) General or localised toxæmia acting directly on the arterial wall.
(2) Hypertonus.
(3) Atheromatous degeneration of the intima.
(4) The influence of the vasomotors.

Vascular spasm may be diagnosed by inspection; by palpation; and, if practicable, by oscillometry and by the ophthalmoscope in the extremely rare cases where the retinal vessels are involved. The duration of vascular spasm may be a few minutes or a few hours, but the mischief done may be immense if a portion of a vital organ is affected and is unable to recuperate quickly. Therefore medication must also be rapid and, of course, harmless.

Whilst searching for such a drug I remembered the efforts made to cure tetanus by subcutaneous or intrathecal injections of magnesium sulphate,[3–5] and decided to try it in cases of vascular spasm. It took a considerable time to find the most suitable unless the leucocytes are diminished below 1000 per c.mm. We seldom see a leucopenia of this degree, even in the severest infections, but we do see such a diminution in some anæmic and leukæmic cases. There must be abundant opportunity for infection during the months that these cases survive, and yet they commonly die of exhaustion rather than of infection. In Case 4, quoted later, the total white cell count fell below 1000 per c.mm. and the leucocytes below 500 per c.mm. at the time when pneumococci were present in a clear pleural fluid, but the infection subsided without the help of a leucocytosis. It is, of course, not to be forgotten that in these cases there had been, a few weeks before, a high leucocytosis and that the products of these cells might still be available in the body. There is some evidence in these data that infections do not progress or disseminate as the direct result of a leucopenia.

THE FATE OF BACTERIA IN THE BODY

It is necessary that substances coming into the body should be made harmonious with the tissues, if they are not to act as irritants or poisons. The mechanism of harmonisation in the body appears to be either by digestion into simpler bodies and then, if necessary, reconstruction into more complex harmonious bodies, or, as in the case of toxins, a direct neutralisation by preformed antitoxins. When bacteria get into the body three fates may commonly befall them if the host survives: (1) they may become walled in by inflammatory and fibrous tissue; (2) they may be lysed; or (3) they may suffer phagocytosis and intracellular digestion, and this may be carried out either by the migrating leucocyte or by fixed phagocytic cells of the reticulo-endothelial system.

Where lysis occurs we must assume that bacterial toxins are set free and, in the non-immune animals, their effects are soon seen. In such conditions, phagocytosis with the digestion of the infecting bacteria would be of the greatest value, but this process requires some degree of humoral immunity. As the tide turns in infection, and immunity begins to develop or virulence to decline, we get both leucocytosis and phagocytosis, and it is at this stage that the cure is apt to become worse than the disease, or indeed to constitute the disease. It is not as though wherever an abscess forms we find the whole or even the bulk of the bacteria ingested and destroyed; on the contrary pus teems with dead leucocytes and living bacteria. Barring mechanical difficulties, such as the presence of bone, it is true that an abscess once drained usually clears up quickly, but we have to consider abscesses in situations that are not or cannot be opened, such as the lung, heart muscle, and hip-joint, and, however much we may value the leucocytes, we are forced to the conclusion that we should be better off without these collections of them.

A neutralisation of the toxins is apt to increase the pyogenic capacities of an infecting organism, that is to say, leucocytosis increases as immunity develops; so that animals with a high antitoxic immunity may yet die of abscesses produced by an infection with the organism to the toxins of which they are quite immune. Panton and Valentine [4] have, however, produced an antitoxic serum which, so far, they think diminishes secondary abscess-formation in staphylococcal pyæmia. Although patients rarely die in the early toxic stage of the disease, it seems that the early stages should be treated with a serum and after that, if possible, we should control the leucocytic response and localisation so as to prevent secondary abscess formation.

ACTION OF BENZOL

This drug is given mainly in cases of myeloid leukæmia with the object of diminishing the number of white cells. In due course it also diminishes the number of blood platelets [5] and of red cells. In the first place it is said usually to lead to a slight rise in the number of both red and white cells, and then to a gradual fall, mainly of the white cells. The fact that the fall in the white cells is slow, and also that it continues after the drug has been withheld, makes benzol a clumsy agent for this purpose. Moreover, if pushed it is likely to damage the liver cells, and this effect also must be taken into account in using the drug in an already toxic case and one which has had and may require again to have anæsthetics.

Since the cases described in this paper recovered we must also consider any other possible action of the drug on the disease in general. Benzol may possibly have a directly injurious action on the staphylococcus in the way that arsenobenzol has been shown to have on anthrax and on some streptococci; also, as a lipoid solvent, it may become attached to the nerve tissues of the body and so act, in the "phylactic" sense of Bichât, in protecting the nerve centres from toxic absorption. We have no proof that it functions in either of these ways.

TREATMENT OF THE CASES

In each of these cases an opening in the bone had been made by the surgeon in charge, and drainage established. We cannot say that this is absolutely essential in all cases, but it does seem to have a useful effect in letting some of the toxic matter escape and perhaps in that way helping the development of immunity in the host, or (what for our purpose anounts to the same thing) diminishing the virulence of the infecting organism. After the operation, as soon as the blood count was found to be actively rising, the cases were put on benzol by mouth, 10 minims twice or thrice daily or for the younger children, 5 minims three times a day, according to the degree of the white cell count and also the amount of red blood available, for this may in time also be affected. The drug is given in capsules or in milk. The progress of the white cell count was followed every few days and when the count had fallen, say to about 10,000, the drug was discontinued. It has to be remembered that the fall may continue after the drug has been stopped so that where the administration had been continued for some time it was stopped while the count, though falling, was still relatively high, say 12,000 to 15,000.

Cases.—Protocols and charts of three of these cases were shown before the Pathological Section of the Royal Society of Medicine in March, 1930, and will only be abstracted here.

CASE 1.—A boy aged 7. Osteomyelitis of lower end of tibia. White cell count: 45,000, five days after operation, benzol ♏ 5, t.d.s. by mouth in capsules. In 14 days the count had fallen to 5000; the benzol was stopped, and the patient steadily progressed to convalescence.

CASE 2.—A boy aged 11. Infection of the lower end of the femur. Count at the time of operation: 25,000; put on benzol ♏ 5, t.d.s. Count rose to 05,000 during the next seven days, benzol increased to ♏ 10, t.d.s. Count fell to 20,000 during the next week, but rose again to 35,000 and remained thereabouts for a further two weeks, when two large subcutaneous and intramuscular abscesses were drained. It fell in the succeeding three weeks to 8000, during which time no further abscesses formed; the benzol was then discontinued. In the next 14 days the count rose again to 30,000, and during this period four additional abscesses formed and were drained. No further benzol was given and the count gradually fell in the next two and a half weeks to 15,000, and the patient became convalescent.

About half a minute after the commencement of the injection the patient feels an intense heat in the body. This is first experienced at the back of the pharynx, then in the face and neck, then in the thorax, and sometimes in the upper limbs, and it proceeds down to the rectum and genitalia, the lower limbs being the last to react. The face is sometimes intensely flushed and may even perspire: the skin of the limbs and body hardly alters in colour or temperature. The pulse becomes moderately quickened. The blood pressure is unaltered. On ophthalmoscopic examination the retinal vessels show no change.

In my opinion the magnesium sulphate probably relaxes vascular spasm by direct action on the vasomotor centre of the brain (either cerebral only or spinal as well). If it acted directly on the arterial wall, there would not be the constancy in the order of the sensation of heat. The more spastic or more clogged the vessel, the less is the sensation of heat and the less effective is the injection. The patient can tell exactly where the sensation of heat ceases, and I have found that the oscillometric index invariably corresponds to the patient's sensations. For example, if the patient does not feel the heat in his calf, the oscillometer will not show any increase in the index. I was, therefore, always pleased if the patient felt the warmth throughout the whole body.

If the intravenous mode of injection is for some reason impracticable the solution of magnesium sulphate without the glucose is well tolerated intramuscularly, but the intravenous route is the one recommended.

It is rather strange that the retinal vessels remain completely unaffected in spite of the general vasodilatation and the fact that the face is the most responsive part of the body. This retinal inaction corresponds to the findings of Baillart,[10] H. Claude,[11] and others, who have observed that the retinal vessels are unaffected by ordinary vasomotor drugs. In my opinion this is further evidence that the retinal vessels may be almost independent of the general vasomotor centres.

I did not observe any discomfort in any of my patients, although several of them were well over 60 years of age, and I think that the alarming signs of respiratory distress that have been seen in the cases of tetanus treated with magnesium sulphate may be explained as due either to the intrathecal method of injection or to excessive dosage. I usually administer the treatment to my patients twice a week.

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FORTUNE FOR MELKSHAM COTTAGE HOSPITAL.—The late Mrs. Ludlow Bruges, formerly of Seend and Bath, who died in Jersey in July last, left the residue of her estate to Melksham Cottage Hospital on condition that a new wing should be built at a cost not exceeding £10,000. It is presumed that Mrs. Bruges intended the remainder of the estate to be used as an endowment fund. It is believed that the hospital will benefit to the extent of about £100,000.

Clinical and Laboratory Notes

CEREBRO-SPINAL FEVER

TREATED WITH LARGE DOSES OF MENINGOCOCCIC SERUM

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A BOY, aged 7, was admitted to the Borough Hospital on March 11th, 1932, as a case of cerebro-spinal fever. There was a history of sudden headache, vomiting, and fever on March 8th, with subsequent marked head retraction and rigidity of neck and spine. Four days previously he had been struck on the head by a stone. In 1930 he had had scarlet fever and measles.

On admission the boy was semiconscious, very cyanosed, with extreme head retraction, opisthotonos, and marked general hyperæsthesia and rigidity. The pupils were large, equal and fixed, photophobia being present. The knee-jerks were absent, and the plantar reflex flexor; bilateral Kernig's sign and tâche cérébrale were present. He was very irritable, feverish, wandering and restless at times, and resented examination. Lumbar puncture soon after admission yielded 60 c.cm. of turbid, blood-stained fluid under pressure, the fluid containing excess of polymorphs and meningococci, which were recovered on culture. He was given 20 c.cm. of meningococcic serum intraspinally. On the evening of March 13th he had severe epistaxis.

Between March 15th and 24th he was worse, being very drowsy, with marked general rigidity and head retraction, and very poor colour and pulse. There was marked general body wasting: he was reduced to "skin and bone" and had extreme general weakness. Subsequently he developed large abscesses over the right knee-joint, left side of face and neck and left iliac crest. The abscess of the jaw was drained on April 16th and contained thick pus and large sloughs. All the abscesses were healed by April 25th.

A week later the boy began to improve: the head retraction was almost gone and the general rigidity less marked. He now appeared to understand when spoken to, but his speech was slow and hesitating. Right internal strabismus was noted. He was convalescent by May 12th and, though the right internal strabismus persisted, his mental condition was normal. He made an uninterrupted recovery.

From the time of admission until April 7th the patient was treated constantly by lumbar puncture and injections of meningococcic serum, both intrathecally and intramuscularly, as will be seen from the accompanying Table, the doses varying between 10 c.cm. and 25 c.cm. daily. He was given 320 c.cm. in all. The temperature kept between 99° and 103° F.

Date.	Cerebro-spinal fluid withdrawn.	Serum given		Date.	Cerebro-spinal fluid withdrawn.	Serum given	
		Intra-thecally.	Intra-muscularly.			Intra-thecally.	Intra-muscularly.
March.	c.cm.	c.cm.	c.cm.	March.	c.cm.	c.cm.	c.cm.
11	60	20	—	25	81	15	10
12	17	10	—	28	—	—	10
13	12	12	—	29	60	15	—
15	8	—	—	30 & 31	—	—	10
16	? a few	10	10	April.			
17	56	10	5	1	5	4	10
18	—	—	15	2 & 3	—	—	10
19	70	15	10	4	4	4	10
20	60	10	10	5–7	—	—	10
21	10	10	—				
22	45	10	5				
23	—	—	10	Total	488	145	175

dose and the best way of introducing it into the body. The results in many cases were so gratifying that I venture to publish them with a plea for its further trial by the profession.

INTERMITTENT CLAUDICATION

CASE 1.—A male Jew, 49 years old, a heavy smoker, complained of cramps in the legs when walking, and frequent attacks of severe pain in the big toe at night. His brachial blood pressure was 160/90; the oscillometric index of the brachial artery was 4, of the right calf ½, and of the left 1. After the first injection the index was 2 in the right leg and 3 in the left, and the patient felt much better. Later, immediately before the intravenous injection of magnesium sulphate, the brachial blood pressure was 150/90, the brachial oscillometric index 4, that of the right leg 3, and that of the left leg 8. Immediately after the injection the blood pressure was 150/90, and the brachial oscillation 4½, that of both legs being 8. After the third injection the patient felt fit and walked without any difficulty, and attacks of pain at night disappeared. Before the injection the index for the right leg was 6 and for the left leg 8; after the injection both legs were 8. Now he comes once a month for examination; the oscillometric index in both legs is 6. This is an early case, where the anatomical changes have probably not yet taken place in the most distal vessels and the spastic element is predominant. The result in the following case was less dramatic.

CASE 2.—A male Jew, aged 49 years, a smoker, could not walk upstairs or uphill; his walking distance was approximately 100 yards. The oscillometric index in the right leg was ¼ or ½, in the left leg 3. After three injections the indices were ¾ and 4; he walked and felt better. At the completion of the treatment the indices were 1 and 4. He visited a spa and underwent a treatment of hot mud-baths. Three months later the indices were unaltered. There was no limit in his walking distance, but if he had to climb up to the third floor he had to do it slowly and stop once or twice for a rest.

Some benefit from the injection of magnesium sulphate was observed in all cases of endarteritis obliterans or Buerger's disease. Success depends upon the part played in the clinical picture by the arterial spasm which is invariably present.

CASE 3.—A spinster, 24 years old, had disseminated sclerosis. When she attended my surgery I noticed dead fingers in both hands with the exception of the thumbs. The normal colour returned within a few minutes of an intravenous injection of magnesium sulphate.

MIGRAINE

CASE 4.—A married woman, 32 years old, had nocturnal attacks of severe headache with vomiting and palpitation. I had the opportunity of witnessing an actual attack and I realised that I was dealing with a case of real migraine. A dozen injections of magnesium sulphate cut short the attacks and she has now been free from them for a year.

SPASM OF THE BRACHIAL ARTERY

CASE 5.—A man, 64 years old, complained of giddiness. I could not feel his pulse in the radial, brachial, or temporal arteries; by auscultation of the heart, the pulse-rate was found to be 150 per minute. The oscillometric index of the brachial artery was ¼. The arteries of the fundi were not narrowed. The day after a magnesium sulphate injection intramuscularly he felt better; his blood pressure was 100/50 and his pulse-rate 60. Two days later, seen at my surgery, the oscillometric index of the brachial artery was 2½.

ACUTE PULMONARY ŒDEMA

Several cases of this distressing condition have left me with the impression that cardiac failure was secondary to the onset of the attack. When seen very early, where the blood pressure was previously known, I found it at the usual level, but falling quickly with the progress of the attack. A paper on this subject has been published by M. Cohen.[6] Fischer[7] may be correct in attributing some cases of acute pulmonary œdema to spasm of the bronchial arteries.

CASE 6.—A married woman, aged 45, with six children, had a blood pressure of 200/220 systolic and 100/120 diastolic, and well-marked sclerosis of retinal vessels. Once in three to six months she suffered an attack of acute pulmonary œdema. She became pregnant, and from the third month of gestation the attacks increased in frequency, the blood pressure remaining at the same level. After one or two very severe attacks the patient, having learned by bitter experience the uselessness of waiting in the hope that the attack would pass off, came to see me immediately she felt a tightness of the chest. I invariably found the pulse-rate quickened, the blood pressure at its usual level, and the respiration frequent and shallow with ominous râles all over the chest. Intramuscular injection of magnesium sulphate always checked the attacks, the patient recovering in six or twelve hours.

ANGINA PECTORIS AND CORONARY THROMBOSIS

Only in some of these cases did magnesium sulphate bring relief.

CASE 7.—A married woman, 62 years old, had had essential hyperpiesis for the last few years, her blood pressure being 180/200 systolic and 100/110 diastolic, with marked sclerosis of the retinal vessels. Occasionally her blood pressure dropped to 135/80 without any sign of cardiac failure. One Thursday she experienced retrosternal discomfort and general weakness, and went to bed. On Friday she felt better and walked about. On Saturday at 10 P.M. I was called to see her; she had agonising retrosternal pain, a pulse-rate of 84, and a blood pressure of 190/110. She became easier immediately after an intravenous injection of magnesium sulphate. On Sunday she was quite well. On Monday at 4 A.M. I saw her again; she had similar pain, this time radiating down the left arm; vomiting; and the same pulse and blood pressure. She was slightly better for a while after an intravenous injection of magnesium sulphate, but the pain returned very soon. At 7.30 A.M. she presented a typical picture of coronary thrombosis; gr. ¼ of morphine was injected and she fell asleep soon afterwards.

CEREBRAL ANGIOSPASM

The diagnosis of vascular spasm in the terra incognita of the cerebral circulation is hazardous and difficult. The phenomenon is almost a new idea in medicine, and has lately been ably dealt with by Gubb[8] and Allen.[9] Angiospasm of the retinal vessels was recently discussed by Mylius (with excellent photographs) and by the author. Baillart's "La Circulation Retinienne" gives a very remarkable description of the living fundus.

I have not seen any harm result in cases of cerebral "vascular accidents" from the injection of magnesium sulphate; sometimes a striking improvement seems to follow. The ophthalmoscope does not help much in such cases.

CASE 8.—A married woman, 61 years old, had been suffering for years from essential hyperpiesis, 200/210 systolic and 110/120 diastolic, well-marked retinal sclerosis, and occasional attacks of bronchial asthma. One morning she woke and found herself unable to speak or to move her right arm and leg, the face not being involved. A neurologist who saw her in consultation diagnosed cerebral thrombosis. I saw her the following day and diagnosed influenza with broncho-pneumonia; the movements of the limbs were restored but the speech remained difficult. In my opinion the cerebral symptoms were probably due to a vascular spasm. Three weeks later speech was still improving and movement of the limbs was quite free, but cerebration at times was confused and rather childish.

CASE 9.—A childless widow, 55 years old, awoke one morning with a mist before her right eye. The pupil of this eye was enlarged nearly ad maximum, but still reacted sluggishly to light; all ocular movements were normal; the retinal vessels were slightly sclerotic, but a few arteries showed changes in their lumen. The blood pressure was 200/100. Magnesium sulphate was injected; she was ordered to bed and given a mixture of bromide, mercury, and iodide, and placed on a fruit diet. On the third day she returned with a blood pressure of 150/95 and the eye quite normal. The urine was normal and the Wassermann test repeatedly negative.

TECHNIQUE OF INJECTION AND PROBABLE MODE OF ACTION

The patient lies on a couch with the head and shoulders slightly raised, and a solution of magnesium sulphate and glucose is slowly injected into the vein. The dose is 5–10 c.cm. of a 20 per cent. solution and an equal volume of 10–40 per cent. glucose.

About half a minute after the commencement of the injection the patient feels an intense heat in the body. This is first experienced at the back of the pharynx, then in the face and neck, then in the thorax, and sometimes in the upper limbs, and it proceeds down to the rectum and genitalia, the lower limbs being the last to react. The face is sometimes intensely flushed and may even perspire; the skin of the limbs and body hardly alters in colour or temperature. The pulse becomes moderately quickened. The blood pressure is unaltered. On ophthalmoscopic examination the retinal vessels show no change.

In my opinion the magnesium sulphate probably relaxes vascular spasm by direct action on the vasomotor centre of the brain (either cerebral only or spinal as well). If it acted directly on the arterial wall, there would not be the constancy in the order of the sensation of heat. The more spastic or more clogged the vessel, the less is the sensation of heat and the less effective is the injection. The patient can tell exactly where the sensation of heat ceases, and I have found that the oscillometric index invariably corresponds to the patient's sensations. For example, if the patient does not feel the heat in his calf, the oscillometer will not show any increase in the index. I was, therefore, always pleased if the patient felt the warmth throughout the whole body.

If the intravenous mode of injection is for some reason impracticable the solution of magnesium sulphate without the glucose is well tolerated intramuscularly, but the intravenous route is the one recommended.

It is rather strange that the retinal vessels remain completely unaffected in spite of the general vasodilatation and the fact that the face is the most responsive part of the body. This retinal inaction corresponds to the findings of Baillart,[10] H. Claude,[11] and others, who have observed that the retinal vessels are unaffected by ordinary vasomotor drugs. In my opinion this is further evidence that the retinal vessels may be almost independent of the general vasomotor centres.

I did not observe any discomfort in any of my patients, although several of them were well over 60 years of age, and I think that the alarming signs of respiratory distress that have been seen in the cases of tetanus treated with magnesium sulphate may be explained as due either to the intrathecal method of injection or to excessive dosage. I usually administer the treatment to my patients twice a week.

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London.

Fortune for Melksham Cottage Hospital.—The late Mrs. Ludlow Bruges, formerly of Seend and Bath, who died in Jersey in July last, left the residue of her estate to Melksham Cottage Hospital on condition that a new wing should be built at a cost not exceeding £10,000. It is presumed that Mrs. Bruges intended the remainder of the estate to be used as an endowment fund. It is believed that the hospital will benefit to the extent of about £100,000.

Clinical and Laboratory Notes

CEREBRO-SPINAL FEVER

TREATED WITH LARGE DOSES OF MENINGOCOCCIC SERUM

By J. Todesco, M.D. Florence, M.R.C.S. Eng.
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A boy, aged 7, was admitted to the Borough Hospital on March 11th, 1932, as a case of cerebro-spinal fever. There was a history of sudden headache, vomiting, and fever on March 8th, with subsequent marked head retraction and rigidity of neck and spine. Four days previously he had been struck on the head by a stone. In 1930 he had had scarlet fever and measles.

On admission the boy was semiconscious, very cyanosed, with extreme head retraction, opisthotonos, and marked general hyperæsthesia and rigidity. The pupils were large, equal and fixed, photophobia being present. The knee-jerks were absent, and the plantar reflex flexor; bilateral Kernig's sign and tâche cérébrale were present. He was very irritable, feverish, wandering and restless at times, and resented examination. Lumbar puncture soon after admission yielded 60 c.cm. of turbid, blood-stained fluid under pressure, the fluid containing excess of polymorphs and meningococci, which were recovered on culture. He was given 20 c.cm. of meningococcic serum intraspinally. On the evening of March 13th he had severe epistaxis.

Between March 15th and 24th he was worse, being very drowsy, with marked general rigidity and head retraction, and very poor colour and pulse. There was marked general body wasting; he was reduced to "skin and bone" and had extreme general weakness. Subsequently he developed large abscesses over the right knee-joint, left side of face and neck, and left iliac crest. The abscess of the jaw was drained on April 16th and contained thick pus and large sloughs. All the abscesses were healed by April 25th.

A week later the boy began to improve; the head retraction was almost gone and the general rigidity less marked. He now appeared to understand when spoken to, but his speech was slow and hesitating. Right internal strabismus was noted. He was convalescent by May 12th and, though the right internal strabismus persisted, his mental condition was normal. He made an uninterrupted recovery.

From the time of admission until April 7th the patient was treated constantly by lumbar puncture and injections of meningococcic serum, both intrathecally and intramuscularly, as will be seen from the accompanying Table, the doses varying between 10 c.cm. and 25 c.cm. daily. He was given 320 c.cm. in all. The temperature kept between 99° and 103° F.

Date.	Cerebro-spinal fluid withdrawn.	Serum given		Date.	Cerebro-spinal fluid withdrawn.	Serum given	
		Intra-thecally.	Intra-muscularly.			Intra-thecally.	Intra-muscularly.
March.	c.cm.	c.cm.	c.cm.	March.	c.cm.	c.cm.	c.cm.
11	60	20	—	25	81	15	10
12	17	10	—	28	—	—	10
13	12	12	—	29	60	15	—
15	8	—	—	30 & 31	—	—	10
16	? a few	10	10	April.			
17	56	10	5	1	5	4	10
18	—	—	15	2 & 3	—	—	10
19	70	15	10	4	4	4	10
20	60	10	10	5–7	—	—	10
21	10	10	—				
22	45	10	5				
23	—	—	10	Total	488	145	175

for over four weeks, showing marked daily variations; it then became subnormal and remained so.

The points of interest in this case are: (1) The recovery of the patient after a severe and progressive attack of cerebro-spinal fever, with strabismus as the only permanent disability. (2) The treatment by repeated lumbar puncture and administration of meningococcic serum over a long period, 14 lumbar punctures and a total of 320 c.cm. of serum being given. This may have influenced favourably the subsequent course of the disease. (3) The development of multiple abscesses and synovitis of the right knee-joint which, according to Netter,[1] is a favourable sign as regards recovery in cerebro-spinal fever. (4) The appearance of severe epistaxis during the first week, with temporary improvement, this not being a usual complication of cerebro-spinal fever.

I wish to thank Dr. Oscar Holden, medical officer of health for Croydon, for permission to publish this case.

RECOVERY FROM THE EFFECTS OF SYMPATHETIC DENERVATION

By Lambert Rogers, M.Sc. Wales, F.R.C.S. Edin., F.A.C.S., F.R.A.C.S.

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The fact that recovery gradually takes place from the ocular changes produced by cervical sympathectomy is not generally known, though the late Sir Percy Sargent was aware of it.[1] It has been observed, however, that the pupil of the rabbit subjected to cervical sympathectomy gradually recovers its size, and recently I have had an opportunity of observing a similar recovery in man. Four years after a cervical sympathectomy, recovery from its effects was almost complete, despite the fact that at the operation half an inch of the cervical sympathetic trunk with its middle ganglion had been removed.

In January, 1928, a railway guard, aged 25, was transferred to the surgical unit of the Welsh National School of Medicine with acute exophthalmic goitre. The goitre was very small, diffuse, and highly vascular. He was treated by stage ligation of the thyroid arteries, and his general condition, including that of his cardiovascular system, improved considerably. Exophthalmos, however, persisted and was so pronounced on the left side, that it appeared as if this eye might become dislocated or meet with some injury. Accordingly, on Dec. 3rd, 1928, cervical sympathectomy was carried out on the left side, the middle ganglion and half an inch of the sympathetic connecting trunks above the ganglion being removed through an incision along the anterior border of the sternomastoid. As a result of the operation, the left *palpebral fissure immediately diminished in width, and the* pupil of the same side contracted to a pin-point and remained so contracted when the other pupil dilated in weaker light. He made a gratifying recovery and returned to work. It was not considered necessary to perform a similar operation on the other side. Although the right eye was somewhat protruded this did not inconvenience him.

At the present time, over four years since the denervation, both palpebral fissures *are the same width; the left pupil* in strong light contracts more than the right but dilates well in shade, and when the right pupil is at its maximum width the left is only very slightly smaller. A very considerable degree of recovery has therefore occurred.

The mechanism of the compensation which takes place when such recovery occurs is being investigated. The fact that recovery from the ocular changes comes about, brings this feature of sympathetic activity into line with the vascular responses to sympathectomy which, as is well known, are soon recovered from. The rapidity of adjustment following the changes induced by peri-arterial denervations has previously formed the subject of communications by Hemingway and myself[2] [3] and others.

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A CASE OF GENERALISED VACCINIA

By C. J. de Vere Shortt, M.B. Dub., D.P.H.

LATE MEDICAL OFFICER OF HEALTH AND PORT HEALTH OFFICER, ABADAN, SOUTH PERSIA

Although after vaccination secondary pustules are sometimes seen round a primary mark, generalised vaccinia is comparatively rare.

On Dec. 1st, 1932, I vaccinated a well-nourished healthy baby weighing 15 lb., aged 3 months, using Government Establishment lymph, and making one scar on the left arm. At the same time I vaccinated an elder child, aged 10 years, in the same house, using the same lymph. On Dec. 7th I inspected both arms, and found them both clean and healthy, presenting the features of a normal six-day vaccination. On Dec. 20th I was asked by the medical officer of health if I would call and see the younger child as some spots had broken out over the body. When I arrived I learned that about three days previously the spots began to appear. The outer surface of the left arm was bright red, the redness extending from 1 in. below the shoulder to about 1½ in. above the elbow. This arm was covered by necrosed skin, and presented the appearance of a large blister out of which the fluid had been withdrawn. There was a slight temperature (99° F.). The child was restless, fretful, irritable, and refused food. On the wrists, thighs, legs, and head, there were raised pearly spots in varying stages of development, and of various sizes, some of which were umbilicate and some appeared more like alastrim spots than those of small-pox.

On Dec. 21st the child was admitted to Fazakerley Hospital under the care of Dr. C. Rundle. On admission there were numerous small vesicles around the original larger one on the left arm, and the spots on the body had developed into typical vaccination pustules. The distribution was then face, back of scalp, both wrists, left thumb, right buttock, and several on the right leg and thigh, and soles of both feet. The temperature was 99°; pulse 132; respiration 34. On Dec. 23rd the temperature went up to 100·4°. The pulse-rate was 144, and the lesions were spreading with copious eruption on both legs and buttocks, and on the face some of these were the size of a shilling. The temperature then fell to normal and remained so till Dec. 26th. On the 25th fresh pustules developed on the back and front of both thighs, but with no rise of temperature. On Dec. 26th the temperature again rose to 99·6°, and the arm became very baggy and was inclined to slough. There were numerous water vesicles at the outer edge. The child was taking food well. On the 27th the temperature rose still further to 100·4°, with pulse-rate 178, and the child developed convulsions and died.

The *post-mortem findings* were as follows:—

The body was that of a well-nourished child. Over the outer surface of the left upper arm was a bare bright red inflamed area 4 in. long by 3½ in. in diameter, and extending approximately from the shoulder to the elbow. There was some deeper coloration of the central portion, suggesting that this was the oldest portion of the lesion and that it had commenced there. The body was covered with raised pearly spots varying in size from about ⅛ in. in diameter up to ¼ in. The larger of these were depressed in the centre and had thickened edges resembling blebs and giving the appearance of developing vaccination pocks. The largest and oldest lesions showed necrosis in the centres and the formation of crusts. There was little or no pustulation. The distribution of the lesions was general but they were more numerous on the lower limbs than on the trunk and upper part of the body. The thoracic organs were healthy, except for some terminal congestion and œdema of the lung bases. The liver and spleen both showed areas of necrosis having the characters of vaccinia lesions. The other abdominal organs showed no abnormality.

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[1] Quoted by Rolleston, H. D.: The Lancet, 1919, i., 600.

Microscopical examination of the skin lesions showed these to have the character of vaccinia papules. The same characters were found in the focal lesions of the spleen and liver. No changes of importance were found by microscopical examination in the brain and spinal cord or in the other organs (suprarenal, heart, kidneys, pancreas) which were examined in this way.

It is obvious from the pathological report that this has been a blood-borne infection. Dr. J. H. Dible, professor of pathology in the University of Liverpool, has stated that he has never seen a case of this kind. It can hardly arise from any septic infection, for the parents and home were extremely clean and there is no evidence of such infection being present. While I was in Persia several thousand vaccinations were done either by me or under my supervision. The scar was made and the lymph was allowed to dry on. It was impossible to keep either pads or bandages on the natives' arms, so after drying they were left uncovered. No untoward result was ever seen. I have had several letters on the subject, and in one the writer has reported to me a case of general vaccinia which occurred in a baby that had been washed in water with which an elder child, who had been vaccinated, was bathed.

I am indebted to Prof. Dible for the report on his post-mortem and bacteriological findings, and to Dr. C. Rundle, the medical superintendent of Fazakerley Fever Hospital, for his notes on the case whilst it was under his care.

MEDICAL SOCIETIES

FELLOWSHIP OF MEDICINE

On March 9th Lord MOYNIHAN took the chair at a meeting of the Fellowship of Medicine and Post-Graduate Medical Association which was held in the rooms of the Medical Society of London and was occupied by a debate on

Operation for Appendicitis

Mr. R. M. VICK said it was a tragic thing that in the year 1933, so long after Treves, so many doctors were willing to discuss whether or not the appendix should be removed when inflamed. He hoped that the revived expectant treatment would be stamped out and its ghost laid. He spoke only of those cases in which the diagnosis had been made as certainly as was humanly possible and where the condition had not subsided by the time the surgeon arrived. In all such cases operation should be performed at once. This battle had been fought out long ago, and the need for operation established. Hundreds of people to-day owed their lives to that recognition. Yet the devil of doubt had arisen again—partly because of the universal fear of operation, partly because not all operations were done by surgeons of experience, and partly through the eternal desire for change. A rising mortality in appendicitis was coming, owing to this pernicious revival of expectant treatment. Sooner than proffering statistics he would say: "Behold, I have passed through the valley of the shadow and I have seen terrible things." Why should we postpone an operation which was always successful, easy to perform, and which transferred the patient from a state of danger to a state of safety: the operation within 48 hours of onset? He would, indeed, go further and advise operation on every inflamed appendix. What applied to adults applied a hundredfold more to children. There would be no great danger and a certain amount of sense in waiting, if it were possible to know what was happening to the appendix, but it was not possible. He proposed "That in every case of acute appendicitis immediate operation was indicated."

Mr. V. ZACHARY COPE opposed the motion, particularly the words "immediate" and "in every case." There were cases in which immediate operation would be disastrous. He agreed with operative measures in unperforated cases, in cases of doubt about perforation, in cases of well-formed abscess, and in most children, but he did not operate in advanced peritonitis; or in cases with a well-formed lump not apparently getting worse; or on patients whose general condition was very bad, and in whom preliminary recuperative treatment, such as saline infusion, might make the operation safe after 12 hours. Many patients had had no treatment before they saw the surgeon and needed preparation for operation. Every case must be judged on its merits, or what was the use of surgical skill and experience? Expectant treatment had not been tried in past years because most of the measures concerned had been unknown in those days. Was the rule of thumb to displace experience? A skilled clinician could tell how the pathological process was going in most cases. In doubt, operation should be performed. There would be no danger of calamity if the patient were put immediately under the care of a skilled surgeon.

Mr. W. H. OGILVIE said that appendicitis was an everyday problem and must be approached with an open mind. He felt almost inclined to agree with Mr. Cope. There were cases of appendicitis in which immediate operation was unwise, but he doubted if these cases were "acute." They were subsiding by the time the surgeon saw them, and were not manifestly ill. Nor was operation desirable in bad surroundings. Nevertheless he only felt justified in withholding operation in 1 or 2 per cent. His experience had impressed him with the fallibility of human judgment. With exactly the same history and physical signs, the appendix might be found distended with pus and about to burst, gangrenous and not distended, or apparently healthy with a little inflammation inside only. Nor could he forecast what was going to happen, and he had much fear for the watched case. The demand for revision of treatment was based on the Registrar-General's figures, which showed that the total mortality had not decreased. These figures, however, did not indicate the great increase in the number of operations and the improvement in diagnosis. He believed the mortality to be no more than a third of what it had been. In Denmark the mortality had been shown to increase steadily with every day that elapsed between onset and operation. The real bone of contention was the third- to fifth-day case with rising temperature and pulse-rate. Mr. Ogilvie confessed that he lacked the courage to wait. At the beginning the risks could be foretold, but as time passed the gamble became greater. He had always operated and had lost only one case: from pulmonary embolism on the tenth day. He put in a plea against being too clever in surgery. The general and the particular aspects of a case were apt to be in conflict. Brilliant surgeons and prognosticians had led humbler men into paths of danger. Appendicitis was the job of the journeyman surgeon, and for him operation was the right course and the safe course.

Mr. **R. J. McNeill Love** divided cases of appendicitis into four groups. Everyone agreed that the early cases demanded operation and the subsiding ones to be left alone. The third group was that complicated by general peritonitis. The fourth was the one needing careful consideration: the patient was seen about 48 hours after onset and showed some elevation of temperature and pulse-rate, localised rigidity, and tenderness per rectum. These cases were what older practitioners had termed perityphlitis. Operation was difficult, drainage was usually necessary, and localised peritonitis became potential generalised peritonitis. On the fifth day the patient was in a negative phase of resistance, and the operative mortality was about 5 per cent. Complications, also, were encouraged by untimely operation. Expectant treatment must rigorously enforce the four F's—Fowler's position, fluids only, fomentations, and a four-hourly chart. Water only must be given by the mouth, and this did not mean beef-tea and custard. Children should not be treated expectantly, for they had usually had purgatives. If the case were watched the inflammation might subside in 50–70 per cent. of cases, and a clean operation without complications could be performed later. An abscess might form in 25 per cent., but this was no occasion for panic; it showed that the resistance could arrest spread of infection. Usually the abscess would resolve, but should be opened if it increased in size or was absorbed too slowly. Gas-and-oxygen and a small incision were adequate. Thirdly, in 10 per cent. of cases, the patient might require emergency operation, but even here the mortality was only about 6 per cent. The average mortality after expectant treatment was no more than 3 per cent. The patient must be under surgical observation the whole time. Localisation would probably occur if the appendix were retrocæcal or paracolic, and infection would spread from an appendix pointing inwards or upwards. Psychology played an important part in the public estimate; for if the watched patient succumbed everybody felt he might have survived if operation had been performed at once; but if he died after immediate operation he was soon buried and forgotten.

Mr. **W. Turner Warwick** said he would operate a little earlier without the help of an experienced surgeon than he would if this were available. The retrocæcal type of appendix might or might not develop an abscess; these could be operated on at any time. The pelvic type should always be operated on at once. Those that spread to the left fossa should be opened up or there would be several separate collections of pus. The retro-mesenteric appendix was very dangerous, producing thrombosis or a small abscess with obstruction of the ileum; but when treated early these gave a good prognosis. When the appendix ran behind the peritoneum on the posterior wall a spreading cellulitis might result, and be almost impossible to treat if suppuration were allowed to supervene. His advice, therefore, was to distrust philosophy and operate on the acute appendix.

Mr. **A. Tudor Edwards** agreed that a waiting policy was advisable in two kinds of case—the subsiding case, and the abscess in a patient whose temperature and pulse were settling down. Otherwise he was in favour of immediate operation.

Mr. **Hamilton Bailey** advocated the method o Sherren. In acute cases with a localised palpabl mass, the mass usually disappeared; if the absces burst, prompt treatment would save life. Two and preferably three months should elapse between resolution and appendicectomy. The rule of letting out pus whenever it was present could frequently b broken and, if so, the day of surgical judgment could not be said to be past.

Mr. **W. B. Gabriel** was in favour of immediate operation, and believed that the mortality was extremely small. The expectant treatment of abscess had found favour because some abscesses had been injudiciously and crudely operated on.

Mr. **H. J. Paterson** said that appendicitis, if treated intelligently, was not nearly such a serious disease as was supposed. He opposed the motion. A perforated appendix was not necessarily fatal. Nature was a far better surgeon than even the youngest of us. In 1911 he had opened a debate at the British Medical Association on the side of operation, but since then he had learned wisdom. Thorough preparation was absolutely essential for any operation, and particularly in acute cases. Very often the preparatory treatment produced such improvement that operation was unnecessary. In the last two and a half years he had had 59 delayed cases with no deaths, and 26 immediate operations with 2 deaths. He could see no objection to drainage; better a weak spot in the abdomen than a coffin, however well padded. That sepsis required drainage was one of the eternal verities of surgery. Was operation always desirable from the patient's point of view? Immediate operation was not necessary in most cases of acute appendicitis, and cases of general peritonitis were better left alone. Surgery was still an art, and there was still room for common sense and clinical judgment.

Dr. **A. Campbell** pleaded for the young graduate who had been urged to let out pus whenever it was present. The expectant treatment demanded a degree of skill that could not be demanded of a young man. It was safer for the young man to operate, provided he worked with skill, and when he had had experience he could select cases for watching.

Mr. **Sinclair** thought that the expectant treatment sometimes left patients with unresolved lumps. He operated in all cases, except that he did not remove the appendix from a localised abscess, especially in children, in whom the risk was very great.

Mr. **C. E. Shattock** was in favour of operation, and emphasised the importance of the technique.

Dr. **Bateman** was also in favour of operation.

Mr. **Stanford Cade** said that all acute appendices should be removed early and then there would be no abscesses and fewer cases of peritonitis. He classified appendicitis into two groups—the early in which the surgeon operated, and the late in which the undertaker officiated. Very few surgeons could say what a particular appendix would do; the risk of operation was known and justifiable; the risk of waiting was unknown and unjustifiable. Conservatism in operation was in direct proportion to the amount of arterio-sclerosis in the surgeon's arteries. There was only one treatment for appendicitis.

Dr. **Walker** (Sydney) argued that no surgeon was thinking of making appendicitis a medical disease. It was a disease that must be treated by operation; but the question was: when? In some cases it was wise to stay the hand. The question was one of life. The figures demanded some improvement in treatment, and the improvement lay in the selection of cases. Young men need not fear the difficulty of judgment; in 20 years' time all surgeons would be able to make the decision with ease.

Mr. M. J. **Petty** agreed that early cases should have immediate operation, but if complications arose the younger man should seek help. In the Argentine patients travelled great distances to hospital, and signs of previous perforation were sometimes found. Many cases could survive non-interference. For amœbic appendicitis operation should be immediate.

Mr. **Cope**, in reply, pointed out that "early" cases were not mentioned in the motion; Mr. Cade's remarks were beside the point. The motion declared that every case was to be operated on immediately, however ill the patient, however bad the conditions, however inexperienced the surgeon. Every speaker on the other side had immediately began to make excuses and beg the terms at issue. Only through bitter experience, and not arterio-sclerosis, had Mr. Cope come to the opinion that there were some few cases which should be left, and if there were some few cases the motion must be lost.

Mr. **Vick** accused Mr. Cope of playing with words. Nobody in his senses would operate on a patient dying of acute peritonitis. The people who had spoken against operation had failed to appreciate the danger of spread. General practitioners taught to watch their cases would not call in surgeons to help them.

The **Chairman**, summing up, said that years ago he had opened a debate in favour of immediate operation. The really essential point in the debate had been entirely omitted: the aperient treatment. Patients never died of appendicitis: they died of its treatment. All acute appendicitis was obstructive, and if no aperient treatment were ever given no case would ever become really active. He had never seen a gangrenous perforated appendix in which an aperient had not been given and had not been the cause of the flagrancy. No danger would derive from expectant treatment if aperients were withheld and if nothing whatever—particularly not water—were given by the mouth. A single drop of water caused intense writhing activity of the ileocæcal valve. Geographical and surgical conditions might be bad, but if they were satisfactory and the case was seen early there could be no question at all that operation was the best thing, and no patient ought to be lost. The question could not be answered with an absolute affirmative or negative, but only by the exercise of clinical sagacity. Only in children was the greatest expert apt to be at fault: no child should be left alone with his appendix for half an hour. Whatever the surgeon might feel about prognosis he must inevitably and without exception operate if an aperient had been given. If not, the best conditions might be sought even at the price of some delay.

On a show of hands the motion was declared passed by 54 votes to 49.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY

At a meeting of this society held on March 9th, with Prof. W. **Langdon Brown**, the president, in the chair, a paper on the

Psychological Surroundings of the Surgical Patient

was read by Mr. W. **McAdam Eccles**. He began by speaking of some general aspects of his subject, including the terror with which the word "operation" fills many people. He then considered specifically the characters taking part in the drama of the surgical operation. The general practitioner, he said, took the part of the prologue. He selected the surgeon; and incidentally his implicit confidence in the man he chose was a valuable preliminary to the establishment of that mutual confidence between surgeon and patient. But not only confidence of the sufferer in the surgeon, but confidence of the surgeon in himself and in his team was essential. Certain minor pre-operative details helped to render the mood of the patient suitable for undergoing an operation. It was of value to permit him to enter the hospital or nursing-home two nights before the operation. On the first night the bed was strange and the surroundings unfamiliar, so that in any case sleep might not be good, especially if an aperient was given. It was better to give the aperient early next morning, and to allow the bowels to act during the day. The second night could be made more comfortable by a simple sedative, and a small, hot cup of tea should replace a distressing early morning enema. The time of the operation should be fixed definitely, and the patient should be in the hands of the anæsthetist five minutes before. Those last five minutes before the hour were apt to be filled with dread, and the minutes after were regarded with veritable horror.

Speaking of the psychological effects of local, spinal, or rectal anæsthesia, Mr. Eccles pointed out that some people dread loss of consciousness. On the other hand to be wholly or partially conscious during an operation might have a disagreeable and lasting effect upon memory, even upon mentality. In addition, a very definite, though often unmeasurable mental element entered into the causation of "shock."

The period after the operation was also important. To find oneself alone when returning to consciousness might be a real shock, and to be deadly sick without a receptacle for the vomit was very distressing. Nothing in convalescence was more encouraging than the prospect of a speedy recovery, if such could be foretold. If, on the other hand, the surgeon knew that recovery might take a long time, it was well to introduce this necessity gradually to the patient's mind, and to prepare to mitigate its irksomeness.

A discussion followed.

ROYAL ACADEMY OF MEDICINE IN IRELAND

A meeting of the section of medicine was held on March 3rd, with Dr. W. G. **Harvey**, the president, in the chair.

Pernicious Anæmia

Prof. **Henry Moore** and Dr. W. R. **O'Farrell** described the case of a woman, aged 58 years, with anæmia, Addisonian in type, but with a normal curve of gastric hydrochloric acid in the fractional test-meal (done on three different occasions).

The patient, Dr. Moore said, complained of weakness, dyspnœa on exertion, looked sallow, and the appearance of the tongue was typical of pernicious anæmia (beefy-red, furrowed, with atrophic papillæ). The red cell count was 2,490,000 per c.mm., the leucocyte count 2000, the hæmoglobin 63 per cent., and the colour-index 1·32; there was a distinct megalocytic tendency, the average size of the red cells, with a Price-Jones count, being 8·13 μ; there was slight but distinct poikilocytosis, polychromatophilia, and punctate basophilia: no normoblasts were seen. The differential count was normal. The blood bilirubin was 1·9 mg. per 100 c.cm.

Liver treatment by mouth gave a reticulocyte response (10 per cent. in ten days) and in two months, with no other form of treatment, the blood count showed red cells 4,640,000, leucocytes 4800, hæmoglobin 100 per cent., and colour-index 1·08; aniso- and poikilo-cytosis were slight, with absence of punctate basophilia and polychromatophilia, and the blood bilirubin content became normal. The patient has remained quite well up to date. She took liver extract or liver by mouth for one year but has discontinued the treatment for the past six months without relapse.

Dr. O'FARRELL said it was very uncommon to find a patient with pernicious anæmia with free hydrochloric acid in the gastric juice, but he felt very strongly that this case was one of pernicious anæmia. Megaloblasts were seldom seen except in very bad cases, and he would not lay much stress on their absence, because the patient's anæmia was never low enough to show them. He was of opinion that in any case the presence of megaloblasts was not sufficient to establish absolutely the diagnosis of pernicious anæmia.

The PRESIDENT agreed that pernicious anæmia without achlorhydria was very rare, but thought that Dr. Moore had made out a good case for their existence.

Dr. V. M. SYNGE suggested that pernicious anæmia was not a definite disease, and said that he frequently came across borderline cases which did not exhibit the complete picture of that disease, though they improved more under liver treatment than other cases of anæmia did.

Dr. W. R. F. COLLIS said he had under his care a patient who was exactly the opposite of Dr. Moore's. The case was one of microcytic anæmia with achlorhydria, and iron had no effect at all on the condition. He had given iron and was now giving vitamin C, in the form of a tumblerful of orange juice three times a day.

Dr. G. T. O'BRIEN referred to the case of a woman, aged 38, who was suffering from pernicious anæmia. A test-meal a week after admission gave a high gastric curve and demonstrated the presence of free hydrochloric acid in the stomach. She was treated by Hepatex and improved rapidly. In the first blood count nucleated red cells were found, but not in subsequent-counts. Tests of fæces for occult blood were negative.

Dr. GEOFFREY THOMPSON said that pernicious anæmia, as originally described by Addison, undoubtedly included a number of cases which nowadays would not be given the name. The question now was, What is pernicious anæmia? He thought that it should be regarded not as a definite disease but as a syndrome characterised by certain features —namely, anæmia, increase in the size of the red cells, active destruction of the red cells in the body, and achlorhydria. It was only when the disease was in the stage of active hæmolysis that any reaction from liver treatment would be obtained.

Dr. MOORE, in reply, said he thought that undoubtedly there were borderline cases, but he himself had never come across one.

Dr. MOORE also showed a patient with atrophy of the metatarsals and of the phalanges of the feet; Dr. SYNGE showed a patient with a lump on the skull; and Dr. G. BEWLEY described a case of peripheral neuritis followed by acute necrosis of the liver.

CORRIGENDUM.—Dr. E. ff. Creed writes: "The report of my remarks at the last meeting of the Medical Society of London (as given on p. 475 of your issue of March 4th) omits the vital point in establishing the diagnosis of this ten-day case of undulant fever—namely, that the agglutination tests were repeated four days later—i.e., 14 days from the onset, and four after the temperature had fallen, and the agglutinin titre to *Br. abortus* had then risen to 1 in 200."

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

A MEETING of this society was held at the University, Sheffield, on Feb. 24th, with Prof. LEYLAND ROBINSON (Liverpool), the president, in the chair.

Gynæcological Cases

Prof. MILES H. PHILLIPS showed a specimen demonstrating an unusual source of severe *post-menopausal bleeding*.

The patient, a multipara aged 61, had two severe floodings 15 years after the menopause. Her regular periods had ceased in 1916 at the age of 44. Thereafter she had a period lasting five or six days in the February of each second year until 1930, when she had a menstrual-like loss lasting for six months. At no time had there been any pain or discharge.

On examination the cervix was free from any signs of new growth and the uterus was felt to be rather larger than a cricket ball. On the assumption that the case was one of malignant disease of the corpus uteri a panhysterectomy was performed without preliminary curettage. The specimen showed a hard fibroid projecting into the cavity of the uterus, the mucosa being slightly ecchymosed in several places and showing a black area suggestive of a clot in a small vessel.

Prof. Phillips concluded that the source of the hæmorrhage was a ruptured vessel in the capsule of the fibroid.

The PRESIDENT and Dr. M. DATNOW (Liverpool) showed a case of *very early tubal pregnancy*.

The patient, a parous woman of 36, was admitted to hospital on account of some slight menstrual irregularity which led her doctor to suspect ectopic gestation, her last period being a week overdue and having been followed two days later by acute pain in the lower abdomen. Bimanual examination failed to reveal any pelvic abnormality, but posterior colpotomy revealed two small blood clots in the pouch of Douglas, so laparotomy was performed. There was no free blood in the peritoneal cavity but the left tube was found to be distended to the size of a man's little finger, with a distinct bulge about its mid-point. There were no adhesions to surrounding viscera. The tube was removed and the patient made a complete recovery.

Serial sections through the tube revealed embryonic elements in 120 sections through a thickness of 0·48 mm., and the sections showed that an ovum had become embedded in the submucosa of a plica at the blind end of a diverticulum and had developed in the tissue between the lumen and the mesosalpinx.

They thought this was a very early example of an ectopic gestation where the ovum had perished at a time antecedent to that in which the trophoblastic epithelium is differentiated into branched processes containing mesothelium, and they considered the ovum, as shown by the sections, to be a little more than a week old.

Mr. W. GOUGH (Leeds) showed a case of a *sarcomatous polypus* treated by radium and later by hysterectomy.

A woman, aged 46, gave a history of the passage of clots per vaginam for 16 days, and between the passage of clots there had been an offensive discharge. She had had slight pain in the lower abdomen and also some difficulty in the commencement of micturition for one week. Examination had revealed the fundus uteri one inch above the symphysis and a large rounded smooth mass protruding from the cervical canal through a widely dilated cervix. At operation the mass was found to be very friable and as much as possible was removed piecemeal, but examination showed a considerable amount of growth still within the uterine cavity. Radium was inserted in the uterine cavity for 75 hours, the total dosage being 4160 mg.-hours. Pathological examination showed it to be a polymorph-celled sarcoma. One week later she was readmitted to hospital and panhysterectomy was performed. On pathological examination of the uterus no trace of sarcomatous tissue could be found in four separate areas.

Prof. PHILLIPS also demonstrated a case of *ante-partum moulding of the head in a breech presentation due to oligohydramnios*.

MEDICAL SOCIETY OF LONDON

Chronic Pancreatitis

Sir JOHN BROADBENT took the chair at a meeting of this society held on March 12th, and Mr. A. J. WALTON opened a discussion on Chronic Pancreatitis.

THE SURGICAL SIDE

He described an investigation he had undertaken into 165 cases of cysts, pseudo-cysts, calculi, and chronic pancreatitis, and 47 cases of pancreatic carcinoma. Chronic pancreatitis with calculi was, he said, very rare, but the differentiation between the interlobular and the interacinous forms was important. A pseudo-cyst was caused by an extravasation about the pancreas, usually from trauma; a symptomless tumour appeared and pain intervened later, and a large cystic cavity was found above a normal pancreas. About half the true cysts started as cystic adenomata; they were neoplasms which had undergone a cystic degeneration. Others might be due to definite obstructive lesions in the head of the pancreas. Primary chronic pancreatitis had an ill-defined pathology and was closely related to the acute and subacute forms. The changes were definite enough at autopsy, and fell into two groups: those in which the fibrosis was distributed regularly through the pancreas, and those in which its distribution was more irregular and nodular. At operation it was difficult to detect owing to lack of knowledge of the characteristics of the normal pancreas. Moreover, the irregular type of chronic pancreatitis might be localised to the head of the gland, and be found almost if not quite indistinguishable from carcinoma. Evenly distributed fibrosis led in some cases to a shrunken, distorted, atrophic condition. Under the microscope the two main groups were easy to determine; in the interlobular group relatively large masses of the gland were cut off by fibrosis, and there was thickening and irregularity which did not interfere much with the gland unless it obstructed the common bile-duct. In the interacinous type the fibrosis ran regularly through the gland and tended to interfere with the islets of Langerhans. The two groups might overlap.

A number of cases developed diabetes later—in Mr. Walton's series 4 out of 61. Two cases had developed carcinoma. Conversely, out of 47 cases of carcinoma of the pancreas 4 had previously suffered from chronic pancreatitis. Careful attention to the symptoms could almost entirely obviate misdiagnosis: only one case of carcinoma had been mistaken for chronic pancreatitis, and only one of chronic pancreatitis for carcinoma. His series had, he said, included 30 men and 31 women, and the commonest age had been between 40 and 60. He had not met the disease in adolescents. It was becoming more and more difficult to believe that infection reached the pancreas by the common bile-duct. Evidence was accumulating to suggest that it passed from the gall-bladder by the lymphatics, and that it might be blood-borne.

Symptoms fell into three groups—diabetes, jaundice, and pain. Mr. Walton said that, for administrative reasons, he saw very little diabetes. The majority of cases had obstructive jaundice. The onset of the jaundice was slow; there might be a premonitory attack with freedom for several months, after which the condition progressed with definite characters. The patient lost the bright orange-red of gall-stone jaundice, and became green and grey, and bile disappeared from the stools and appeared in considerable quantities in the urine. Itching became intolerable. Pain, in the early stage, was that of periodic dyspepsia, and might, like jaundice, be manifested in a premonitory attack. It was something like that of peptic ulcer, but there was "something wrong," and the clear-cut ulcer history was absent. If the patient did not come until pain was continuous there was a danger of the misdiagnosis of carcinoma, but there were often superadded attacks of acute pain like that of biliary colic. Sometimes pain was added later to jaundice. Except for the determination of the undigested fat content and of the diastase index, chemical tests were not of great value. X rays had been helpful in a negative way; sometimes a large mass might be seen indenting the duodenum, but the appearance was more common in carcinoma of the pancreas.

The treatment of the diabetic case was essentially medical, in the absence of gross gall-bladder disease. When there was a mild degree of pain suggestive of gastric or duodenal ulcer, and when the patient's weight was reduced, the case was probably one for medical treatment, but it was difficult to make an accurate diagnosis without operation. Calculi must be operated upon. To relieve obstructive jaundice it was necessary to form an anastomosis between the dilated gall-bladder and the stomach or duodenum. This operation was not free from risk. Cases without jaundice fell into three groups. Those with little evidence of obstruction and marked evidence of gross gall-bladder disease were treated by cholecystectomy, the common duct being explored. When the lesion of the gall-bladder was mild and there was a possibility of dilatation of the duct, Mr. Walton did a cholecystoduodenostomy. In mild or invisible infection of the gall-bladder with no obstruction there were two possibilities: cholecystectomy and drainage, or medical treatment after simple laparotomy.

THE MEDICAL SIDE

Sir WILLIAM WILLCOX said that diagnosis was a matter of elimination and was usually made by the surgeon. There were no reliable laboratory tests and no objective signs, for the pancreas could rarely be palpated, and was transradiant to X rays. Diagnosis, therefore, depended largely on subjective symptoms, but in some cases there was a tendency to profuse hæmorrhage. Sir William thought that in many cases, particularly those associated with calculi, infection spread up through the duct, and also that infection might be blood-borne. The ætiology fell into four groups. The most important one was where the pancreatitis was secondary to infections of the gall-bladder and intestinal tract. It might also be due to a general blood infection such as typhoid, food poisoning, or exanthemata, and occasionally to syphilis and tuberculosis. It might follow poisoning by chemicals such as alcohol and lead; and it might be associated with some other lesion of the pancreas, such as cysts, calculi, or traumata. Chronic pancreatitis might resemble a gastric lesion, and might be associated with obstructive jaundice or with diabetes.

It was important to do the van den Bergh or icterus index test for latent jaundice. The urine diastase might be immensely raised, and a low diastase reaction was a strong nidication against pancreatic disease. Glycosuria was not common. The blood-sugar test and glucose-tolerance curve were not sufficiently often determined; in advanced disease there might be a positive result. An increase of fat in the stools was an important sign. If salol and saladine were given, salicylic acid and iodine respectively might be excreted in the urine. Sahli's test—the administration of methylene-blue or iodoform in a gelatin capsule hardened with formalin—was useful.

Medical treatment was disappointing in many cases. Associated lesions should be dealt with, and infection of the intestine by non-lactose fermenting organisms should be combated by irrigation, vaccines, and antiseptics. Saline aperients and iodides might be given. The dietary should be fat free, carefully selected, and pancreatin and alkalis might be administered to aid digestion.

THE CHEMICAL SIDE

Prof. E. C. **Dodds** said that chemical tests were of very little assistance, because the pancreas, like the liver, had such a large reserve of efficiency. The diastase test was absolutely valueless in chronic pancreatitis, though in the acute form it might be of great value when it showed over 200 units. There was no reason why the diastase should be high in a destructive lesion of the pancreas, and the content depended on many factors other than the pancreas itself. Sixty to 100 units might be found in a normal subject. Glycosuria, unless very severe, was not a reliable index of pancreatitis. The glucose-tolerance test had been a complete failure. The fat content of the fæces was always very high in acute pancreatitis, but the normal variation was much wider than the orthodox figure of 25 per cent.

DISCUSSION

Mr. **Zachary Cope** described a case of pancreatic dilatation due to gummata. He asked whether Mr. Walton ever found any difference in the dilatation of the duct in chronic pancreatitis and in carcinoma; he had found the pancreatic fluid under great pressure in two cases of neoplastic obstruction.

Dr. G. E. **Vilvandré** said that he had visualised pancreatic calculi by X rays in six cases.

Mr. **McNeill Love** suggested that chronic pancreatitis might affect the prognosis in abdominal and gall-bladder infections.

Mr. W. E. **Tanner** gave a warning against the hasty removal of the gall-bladder when the abdomen had been opened for chronic abdominal pain and nothing had been found. Mr. Walton's operation, he said, for choledocho-duodenostomy was rather a difficult and dangerous one. He asked the minimum pathological appearance of the gall-bladder which would justify its removal.

Mr. L. E. **Norbury** pointed out the uncertainty of differential diagnosis between carcinoma of the head and chronic pancreatitis, and suggested that the surgeon should not be too pessimistic in telling his prognosis to the relatives.

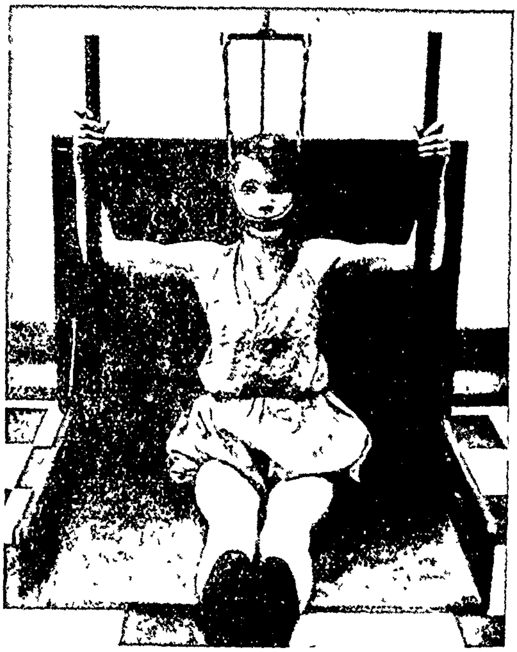
Mr. **Philip Turner** described a case of gummatous infiltration of the alimentary tract which had strongly resembled cancer. He deduced the lesson that, in encountering an unusual and unexpected condition in the region of the pancreas, one should always bear syphilis in mind.

Mr. **Walton**, in reply, laid stress on the analysis of the patient's history as the chief means of diagnosis. The pain was more or less characteristic in its periodicity and in the amount of flatulence associated with it; it was present at night, and not relieved by food, and it alternated with short attacks of severe pain running to the left shoulder. The surgeon was, he said, never justified in removing the viscus purely on symptomatology, and he did not remove a gall-bladder unless it was grossly diseased. If a gall-bladder were white or grey instead of blue, he might explore the interior.

NEW INVENTIONS

BENTLEY PORTABLE HEAD-SUSPENSION APPARATUS

The simple piece of apparatus shown in the illustration is really a portable Fisher frame. On the back of the upright board is a vertical steel mast carrying the usual transverse bar and head sling. The mast can be adjusted so that any patient of reasonable size can be suspended with the buttocks clear of the floor board, thus allowing all the body-weight except that taken by the heels to act through the spine. The particular merits of this apparatus are: (1) it eliminates the fright and faintness that some children experience when slung from the ceiling or from a high bar; (2) the flexion of the hips counteracts any tendency to lumbar lordosis; (3) the arm bars at the side allow the child to brace the shoulders and spine against the frame during the performance of deep-breathing exercises; (4) the child can release herself from suspension when necessary, thus saving the masseuse the trouble of having to leave another patient to release the child who is suspended; (5) its portability and its low cost.



This apparatus may be used for the post-operative treatment of torticollis and for the treatment of all spinal defects in which suspension is desirable. It was designed by Miss Bentley, who is in charge of the remedial exercises clinic at the Royal National Orthopædic Hospital, Great Portland-street, where it is now in constant use. It has been ordered, or is being installed, at a number of the clinics in connexion with the hospital, for it appears to have many advantages over the usual type of suspension apparatus.

It was originally made in the workshops of the hospital, but may now be obtained from Messrs. Stanley Cox, 39, Gerrard-street, London, W.1.

H. J. **Seddon**, F.R.C.S.

Westminster Ophthalmic Hospital.—At the annual meeting last week Colonel Arthur Brodrick, who presided, stated that the ordinary income last year, nearly £21,000, was the highest on record. The debt to the bank, which was £15,000 three years ago, has been reduced to £5750.

ablishment in 1922, owing to the generosity
— the Rockefeller Foundation, of the London
hool of Hygiene and Tropical Medicine; the
cond in some measure by the transference of
oor-law hospitals to the municipalities, which has
sulted, in London at least, in an unparalleled
crease of good internships. The realisation of
e primary object of the Athlone Committee has
rried longer, and it was not until January, 1930,
hen a committee appointed by Mr. NEVILLE
HAMBERLAIN in 1925, with Mr. ARTHUR GREEN-
OOD as chairman, reported, that a practical
ggestion opened the way for immediate action.
his committee recommended "that the British
ost-graduate Hospital and Medical School, com-
ising a hospital with 400 beds, a medical school,
d residential facilities for post-graduate students,
ould be established on a site which will permit of
s future expansion as its services to the science and
t of medicine and to the public are developed and
cognised, by means of the conversion of a public
spital—viz., the Hammersmith Hospital, at which
e 400 beds initially required are already available."
The stage of accomplishment has now been
ched by a decision taken last Tuesday at a
ting of the London County Council. An
ement between the Council and the School
been prepared and the Treasury, after con-
ion with the University Grants Committee,
pproved this agreement and sanctioned the
g in hand without delay of the building
ions. The plans provide for a medical
for casualty, receiving, and out-patient
ments in two new blocks, a new ward, and
ments for such things as massage and light
ent. The new ward will result in a net
e of 28 beds for patients. It is interesting
the way in which the central public health
tee of the L.C.C. set out the advantages
e Council's point of view of the association
Hammersmith Hospital with a teaching
It will, they suggest, improve the medical
ical treatment of the sick of London and
the value of the Council's hospital service.
l be a concentration at the School of the best medical and surgical skill available to teach on modern lines all members of the medical profession who take advantage of the facilities offered. It will thus be possible for members of the Council's medical staff to attend the School for post-graduate study, and the opportunities thereby given for instruction in the most modern methods should be of the greatest benefit to the Council's hospital service generally. In addition patients from any of the Council's hospitals can be sent to Hammersmith Hospital for the purposes of diagnosis and the specialised treatment available there.

The arrangement between Council and School will include the grant to the School of a licence to occupy the school premises for a term of 999 years at a barleycorn rent, the licence being determinable at any time on failure of the School to carry out its covenant. The number, nature, duties, and pay of the professional and technical staff of the school will be agreed jointly, but this side of the staff will be appointed and paid by the School. The nursing staff on the other hand will be appointed and paid by the Council. The domestic, engineering, and maintenance staff will be appointed and paid by the Council, the School repaying the proportion of the cost utilised by it. Either party may appoint and pay additional staff. The two parties will agree as to the number of students resident in the hospital, the present arrangement being that a quarter will be nominated by the Council and three-quarters by the School. The Council provide lodging and maintenance for all of them, recovering from the School the cost in respect of the School's nominees; but the Council will be entitled to the services of the whole of such students in connexion with the work of the hospital. The maintenance expenditure for the first full year is estimated at £23,940, and for later years at £22,665, but should any item of the maintenance expenses be excessive by reason of the presence of the School, the School is to pay some proportion of the excess. All these matters will be determined on the advice of a joint committee of eight members, nominated half by the central public health committee of the Council and half by the School.

ANNOTATIONS

ATIONAL SYMPOSIUM ON CIRRHOSIS OF THE LIVER

ence habit initiated by our political
immediate post-war years seems to
firm hold in governmental circles and
g to other walks of life. There is
in favour of international conferences
subject to be discussed is carefully
hich definite results may be expected
free interchange of knowledge.
etimes happens, the known facts
nder consideration are available
of the subject, and are insufficient
elopment of an agreed policy,
if scientific congresses of the
effort they entail. The Inter-
of Geographical Pathology was
an organisation for the study of the influence of race, environment, climate, habits of life, and so forth on disease. It owes its inception largely to the efforts of Prof. M. Askanazy, of Geneva, Prof. L. Aschoff, of Freiburg-i.-Br., Prof. De Josselin De Jong, of Utrecht, and Prof. C. Roussy, of Paris, and local committees have been formed in some 32 countries. The subject chosen for discussion at the first meeting of the association, which was held under the presidency of Prof. Askanazy in Geneva on Oct. 8th to 30th, 1931, was Cirrhosis of the Liver, and it was hardly to be expected that much new information would emerge from a conference on such a well-worn subject. Nevertheless, the proceedings of the meeting which have recently been published [1] contain much that is of interest and value. The conference was divided into five

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[1] Comptes Rendus de la Première Conférence Internationale de Pathologie Géographique. Genève: Librairo Kundig. 1932. Pp. 367. Swiss Fr.10.80.

sections, each with its special reporter. Thus Prof. De Jong dealt with the liver in cirrhosis and Prof. R. Rässle with the condition of the organs in cirrhotic subjects. Prof. N. Fiessinger discussed the symptomatology of hepatic cirrhosis, Dr. W. E. Gye experimental cirrhosis in its relation to human disease, and Prof. F. C. Mann disturbances of metabolism in hepatic cirrhosis. Dr. Paul Robert contributes to the report of proceedings an appendix on statistics, classification, and ætiology. As might be expected from the names of their authors, the reports form complete and well-balanced accounts of the different aspects of the condition, and as such will be invaluable as works of reference. It must be acknowledged that little light is thrown by the different authors on the ætiology of hepatic cirrhosis, and it is clear that most of the theories which have been put forward from time to time to explain the occurrence of the more obscure forms of the disease still remain merely theories. Even the great alcohol question remains unanswered, for Prof. Fiessinger claims that to produce cirrhosis alcohol must be taken in small quantities, in a dilute form, continuously but in not sufficient quantities to produce much intoxication. He suggests that aperitives, or wine taken on an empty stomach, exactly fulfil the necessary conditions. This conception of ætiology, however, would doom far more people to suffer from a hob-nailed liver than the clinical incidence of the condition would support. The report has been admirably edited by Prof. Askanazy.

IN DEFENCE OF MARY STUART

Sir George Turner is a fearless advocate of Mary Queen of Scots. He examines the Campbell Letters—we refer readers to this closely written narrative[1] for the story of these letters and their relation to the Casket Letters—and roundly describes them as forgotten forgeries. Further, he finds that their application to previous historic arguments throws a new light upon incidents hitherto used entirely for the detraction of a terribly maligned woman. Sir George is the first medical man, we believe, to have been attracted by the problems with which Mary's dramatic and tragic career is beset, and undoubtedly analysis from a medical point of view of Mary's health has a direct bearing on the understanding of her behaviour at certain junctures. Sir George finds her to have been an emotional hysterical subject, and gives reasons for believing that she suffered from gastric or duodenal trouble, attacks of hæmatemesis having twice jeopardised her life. Later, anæmia associated with the gastric disorder and complicated by a uric acid diathesis and rheumatism made of her a prematurely aged woman. With the allegations against Mary's moral character the author deals contemptuously. In the sixteenth century, and especially in the circles where rulers and princes moved, sudden illnesses or unexpected deaths were commonly attributed to the poisoner, especially if it should be in the interests of any religious creed or political or dynastic ambition to remove an obstacle. Mary did not escape the accusations of murder, and one example of these rumours Sir George describes as "infernal nonsense," while in respect of others he has no difficulty in showing that natural causes, then unknown, lay in all probability behind the episodes. Mary had been accused on no grounds whatever save his premature death of murdering her first husband. He was a wretched weakling by whose death she lost precedence, and the accusation is generally regarded as merely malicious. Still, it was certain to have been remembered against her when it was rumoured that she had tried to poison Darnley. Of this Sir George writes as follows:—

> "With reference to the presumed poisoning of Darnley, when he left Mary he broke into a pustular eruption all over his body; he had pains in his head and throughout his bones and he had a very bad sore-throat, and lost all his beautiful hair. This eruption was either that of small-pox or syphilis."

There is no doubt either about the acumen or the ardour with which Sir George Turner makes this addition to the controversial literature evoked by Mary's tragic life. He has used the methods of the diagnostician to arrive at the general conclusion that Mary was innocent of charges brought against her on political grounds, and was in effect sacrificed in the interests of the Protestant succession.

NORMAL HÆMOGLOBIN

THERE still seems to be some uncertainty about the normal level of hæmoglobin in the blood stream which is to form the basis of the scale on which we calibrate anæmias and polycythæmias. A year or two ago Dr. C. Price-Jones examined[1] 100 healthy men and 100 healthy women, obtaining his samples by pricking the skin and measuring the concentrations of hæmoglobin by a verified Haldane hæmoglobinometer. For the men he obtained a mean of 105 per cent. on the Haldane scale, with a range from 96 to 116; for women, a mean of 98 with a range of 90 to 110. These figures were higher than the level originally determined by Haldane and Lorrain-Smith, but substantially less than the normals of about 112 per cent. which had in recent years been measured by various workers in other countries, notably in America. A visit to Boston enabled him to be sure that the difference was not due to the use of different methods of measuring the hæmoglobin, and he suggested that some degree of polycythæmia was caused in the United States by chronic carbon monoxide poisoning from petrol engines. Some doubt has since been cast on his facts and inferences by Drs. C. E. Jenkins and C. S. D. Don of Salford. A series of 53 Salford males gave[2] a mean of 115 per cent., and no clear connexion could be found between the concentration of hæmoglobin and the presence of CO in the blood. It does indeed seem from the work of, for example, A. O. Gettler and M. R. Mattice,[3] that though many city dwellers who use motor transport have a certain quantity of CO in their blood, the amount of hæmoglobin so rendered useless is not enough to cause a compensatory rise of hæmoglobin from 105 to 112. In a second paper they deal with 118 males and 116 females from Lancashire and other parts of England, and by van Slyke's gasometric method obtained means which were equivalent to 115 and 100 per cent. respectively on the Haldane scale. The difference between 105 and 115 is well beyond the errors of random sampling and can be hardly due to errors of technique; as Dr. Price-Jones showed, the van Slyke and Haldane methods give almost identical results. The only explanation which seems to remain is that Dr. Price-Jones used cutaneous samples of blood and Dr. Jenkins samples drawn from veins, as did the other workers who have obtained similar high values. It is generally accepted that a free-flowing prick in the ear or finger yields arterial blood. As this is what is supplying the tissues and what is commonly examined in clinical hæmatology, it certainly seems desirable that the normal standard should be expressed in these terms. But curiously enough no extensive comparison of the hæmoglobin of venous and finger blood seems to have been made, so that the tentative conclusion that the former gives higher concentrations of hæmoglobin than the latter is no more than inferential. It is, too, perhaps a little difficult to believe that something like 15 or 20 per cent. of the plasma leaves the blood in its passage through the capillaries. It appears to be clear, however, that samples obtained in the two ways cannot be assumed equivalent until direct evidence to that effect is available.

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[1] Mary Stuart: Forgotten Forgeries. By Sir G. Turner, K.B.E., C.B. London: Rich and Cowan, Ltd. 1933. Pp. 320. 10s. 6d.

[1] THE LANCET, 1931, ii., 1140.

[2] Jour. Hyg., 1932, xxxii., 406; 1933, xxxiii., 36.

[3] Jour. Amer. Med. Assoc., Jan. 14th, 1933, p. 92.

THE HEALTH OF THE AMERICAN STUDENT

AN interesting article was contributed recently to the *Journal* of the Association of American Medical Colleges by Dr. E. B. Heck, the physician-in-charge of the Student Health Service, attached to Columbia University College of Physicians and Surgeons. The report is founded on figures gathered from the examination of 1124 students over a period of eight years, commencing with the results of the examination of 104 students who underwent voluntary scrutiny in 1924, since when a physical examination has been a compulsory feature of the curriculum of the College. Dr. Heck supplies no detailed analysis of the figures nor correlation of the findings or the year by year changes, so that health alterations which may have occurred during the period must be estimated by a general impression of the facts, but the messages are usually clear, the notes on the incidence of diseases being sufficiently ample for this purpose. The College draws its students mainly from urban communities. More than half of those forming material for the report have been resident at home, and of the residue a quarter are housed in dormitories—i.e., in sleeping accommodation definitely connected with the organisation of the University. The residue live in lodgings of their own choice, usually with fellow students. Fifty-nine per cent. of all the students were obtaining their meals at their places of residence, the others being dependent on the irregularities of restaurant catering. With regard to the habits of the students, taking them in the lump, one is surprised to find that regular outdoor exercise was exceptional, until it becomes clear that a considerable number live far away from the educational centre and are thus forced to spend much time in their to-and-fro journeys, having the double advantage that outdoor exercise is thereby compulsory and good sleep easier to obtain, for the group residing in the University dormitories suffer from the noise at night. The work of the residents is also interfered with by "other distractions," among which we presume must be placed the "occasional parties" alluded to, which may account for an admission on the part of 20 per cent. to the use of alcohol. But there is no evidence of undue use of alcohol or of excessive smoking. Five per cent. of the students were found to be wholly self-supporting, in other words they were carrying on occupations as wage-earners; and a further 29 per cent. of them were partially paying for their medical education by outside activities. The general health status of the student groups has been estimated by Dr. Heck through an investigation into "time lost" through sickness, when the reflection is made that here a comparison with the sickness records of the ordinary industrial group would not be fair, as the tendency of the medical student when sick would be to remain at work, while the tendency of the salaried worker would be to obtain time off. The material for verifying the correctness of the reflection exists, as a proportion of the students were wage-earners, but the collection of the figures might have been difficult. It is suggested that among the students who drop out from what are called "nervous conditions"—being "run down" and other indefinite plights—many were on the verge of examinational failure and went sick just before sitting for their tests; the condition is prettily termed by Dr. Heck "a physical expression of a lack of adjustment to prescribed routine," a definition which should commend itself to the ingenious student for use in the home circle. The general conclusion of Dr. Heck is that the work on which he is engaged is justified by its results; he is convinced that a student health service should be associated with every medical school curriculum. He does not suggest that the director of such clinical investigations would be dealing either with a physically inferior group or with a group that is particularly incompetent to look after itself, for the reverse conditions seem to obtain; but there are many errors of habit and many needless anxieties among students which could be corrected or removed by sagacious inquiry into habits and domestic background as well as physical symptoms. We can well believe that the student pursuing a very strenuous career has often been valuably helped by Dr. Heck, and incidentally the annual examination of medical students has something of a didactic value, for it is the application to the students of the procedure which they will later have to apply to others.

OSCILLOMETRY AND THE "MEAN" PRESSURE

THE importance of the "mean" blood pressure has been established in recent years. H. Vaquez and D. M. Gomez[1] have published accounts of mean pressure hypertension accompanied by normal extremes of pressure—that is to say, normal systolic and diastolic readings. They state that wide variations of the extremes of pressure are not fatal provided the mean pressure remains relatively stable, whereas changes of the latter induce, even when the extremes of pressure remain normal, a serious disturbance of the circulatory system. The instrument used by them is Pachon's oscillometer, or one of its modifications. It consists of an aneroid capsule enclosed in a rigid and airtight metal box—the box, capsule, and cuff being in communication. A pump is attached to the box by means of which the pressure in the circuit is raised and registered on an attached manometer. A compression is provided which disconnects the aneroid capsule from the main box, when the pulsations from the vessels are transferred by means of the cuff along the connecting tube to the recording needle. The pressure is first raised above the systolic reading and at this point only small deflections of the needle are seen, the result of the waves in the patent part of the artery beating against the occluded part of the vessel; then as the pressure is lowered, at the point where blood is just able to enter the compressed vessel, there is a sudden increase in the needle's deflection corresponding to the systolic pressure. The deflections increase in amplitude as the pressure is lowered to a point of greatest oscillation; this point is taken as the "mean" pressure which according to Vaquez is about 8—this figure being the height in centimetres of the greatest deflection. It is reached when the counter pressure in the armlet equals the pressure within the artery. The minimum pressure is admitted to be the most difficult reading to get with accuracy. Gomez collected 300 curves from subjects in Vaquez's clinic, and an *analysis of these curves shows that there are three* broad types: (*a*) where the change to the diastolic descent is abrupt and therefore easily determined; (*b*) where *the change is indefinite, and therefore can* only be guessed at; (*c*) where there is no change at all, but a gradual descent making reading impossible. *Gomez's findings have been confirmed by* C. Shellshear and C. Sippe.[2] The peculiar value of the oscillometer, as has already been pointed out by J. F. Halls Dally, *is that it gives an indication not* only of the arterial condition but also of the cardiac condition. Further, although it is not a means of comparison between two individuals, it is a constant, given good health, for any one person and is a delicate indication of vascular and cardiac change should it be found to vary at subsequent examinations; hence the value of being able to get photographic records As long ago as 1921 Pachon found that the oscillometric index (greatest deviation of the needle) corresponded to the "mean" pressure; this was confirmed by P. Gley and Gomez[3] by means of experiments on living animals. This mean pressure or oscillometric index has been claimed as a gauge of the functional capacity of the heart, and Vaquez, Kisthinios, and Papaioannou have recently supported this claim. This reading has been found to be the same for both sexes, to increase slightly with age, to be unchanged by exercise or digestion, but to rise whenever there is any decompensation of the heart. Since the recognition of the mean pressure a clinical condition named by the French "hypertension moyenne solitaire" (H.M.S.) has been described; the associated symptoms, if any, are mainly headache and dyspnœa on exertion. The importance of the recognition of this condition would e *to make an early diagnosis possible in hypernsion*, before the appearance of signs and symptoms, nd before there is any appreciable rise in either the *systolic or diastolic pressures. At this stage* the kidney function is said to be normal which suggests that in certain forms of hypertension there is no *primary renal lesion, but that the raised pressure* precedes the renal changes. Some cases of eclampsia show a raised mean pressure and Bailliart and Gomez[4] *have found a similar condition in a number* of cases of glaucoma; this confirms a view long held by Vaquez that the absence of altered blood pressure in this class of case has been due to the lack of adequate means for detecting its presence. If the mean pressure is as constant and as easy of estimation as *many observers claim, and if, on the contrary,* the diastolic reading on any instrument is a very variable and unreliable figure, it would seem desirable to make a routine *examination of the mean pressure,* particularly if it makes possible an early diagnosis in a group of important diseases. C. Lian and C. Zamfir,[5] however, *consider that H.M.S. is a rare condition, more in the nature of a clinical curiosity,* and an examination they undertook on seven cases of glaucoma failed to reveal a single example. They stress, however, the constant character of the measure between the median and minimum pressures as compared with the variation between the *maximum* and minimum pressures in any individual case and they endorse the view that the variation between the maximum and mean figures is more accurate a reading because of the difficulty in obtaining a *precise reading of the minimum pressure.* The natural conclusion, as already suggested, would be to substitute the exact method of measuring the *mean pressure for the uncertain estimation of the* minimum pressure. More investigations will certainly be essential before oscillometry becomes generally *adopted as a routine examination; that such work is being done is shown by the detailed account given* by L. Blavier[6] of research on certain anomalies of the oscillogram and their interpretation. There is still a wide divergence of opinion about the normal figure for the mean pressure; Lian considers that 8 for the mean pressure is pathological hypotension, whereas Vaquez accepts it as normal and says that the figure may vary from 8 to 12 c.cm. between the ages of 10 to 50 years. In some oscillometric curves a plateau is present which makes it impossible to detect any highest point; recently, however, Vaquez, Gomez, and Lajoie have demonstrated that by using a large cuff—15 cm.—the plateau can be obviated, and that the correct reading proved to be as much as 10 to 20 mm. above or below the centre of the plateau. When an instrument is constructed which is generally accepted as reliable, oscillometry may become widely used for estimating the blood pressure, and the significance and importance of the mean pressure will be generally recognised.

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[1] Presse Méd., 1931, xxxix., 789.

EXPERIMENTAL CARCINOGENESIS

BREEDING experiments with mice carried on over a number of years at the Institut du Radium in Paris by Madame Dobrovolskaia-Zawadskaia have resulted in the production of strains of mice with a very high incidence of spontaneous tumours. Among the males spontaneous tumours appear no more frequently *than in the males of the ordinary stock,* but among the females mammary carcinomata are unusually common. This idiosyncrasy stimulated curiosity as *to what would happen if the formation of mammary* tissue could be induced in males, and particularly in males of a cancer strain. L. Loeb and others tried to *answer this question by transplanting ovaries into* castrated males, but failed to observe the development of mammary carcinomas. A. Lacassagne[7] injected *folliculin daily into castrated adult males, again* with negative results. But when very young males —10 to 18 days old—from a cancer strain were taken and *injected daily with small doses of folliculin,* small islets of mammary tissue developed and these became the seat of carcinomata. The injections were carried out with a litter of three males and two females; all three male animals developed mammary carcinomata, the first tumour appearing about five *months after the onset of treatment. One of the* females also developed a mammary carcinoma at the age of 4 months. This is exceptionally early, since even in a cancer strain spontaneous *tumours never* appear before the sixth month, and the average age at which they develop is about 1 year. Curiously enough the other female is *still alive, but, in spite of the injections, has not yet developed a malignant* growth. Further experiments will have to decide whether *the folliculin acted indirectly in inducing* the appearance in the males of mammary tissue, which then, owing to the hereditary predisposition *latent in the strain, developed malignancy; or* whether the folliculin had in addition a more direct exciting action in producing malignancy. Dr. Lacassagne has also been successful in producing malignancy by an entirely different route. Three years ago he showed with Dr. R. Vinzent [8] that by a single irradiation of an abscess produced in rabbits by the injection of *Streptobacillus caviæ* sarcomata were produced in three animals out of twelve. The tumours represented three different histological types: an osteosarcoma, a fibrosarcoma, and a rhabdomyosarcoma. No tumour developed in rabbits which had received injections of the streptobacillus but had not been irradiated. It appeared from these experiments that the development of malignancy was the result of the combined action of the micro-organisms and the irradiation. Quite recently, however, Dr. Lacassagne [9] has been able to obtain similar results by irradiating a sterile granuloma produced in rabbits by the injection of kieselguhr. The kieselguhr was injected under the mammary gland on the right and left side, and only one side was irradiated. In two rabbits malignancy developed on the irradiated side, one tumour being a carcinoma and the other a sarcoma.

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[2] Med. Jour. of Australia, 1932, xix., 412.
[3] Jour. de Physiol. et de Path. génér., 1931, xxix., 38.
[4] Bull. de l'Acad. de Méd. Paris, 1931, cv., 510.
[5] Presse Méd., Feb. 1st, 1933, p. 169.
[6] Revue Belge des Sciences Méd., 1932, iv., 559.
[7] Comptes rend. de l'Acad. des Sciences, 1932, cxcv., 630.

SAFETY IN CHILDBIRTH

AMONG the changes which have been taking place in obstetric practice during this century one of the most important is the increasing use of hospitals for delivery. Both in Europe and in America new institutions have been built and existing ones have been enlarged to accommodate more cases of both normal and abnormal labour. In a recent paper J. B. DeLee and H. Siedentopf [10] discuss whether these recent changes in the practice of obstetrics have resulted in better welfare of mother and child, less loss of life, greater protection of health. They come to the depressing conclusion that the increasing preference of the hospital as a place of delivery seems not only not to have bettered the results but seems actually to have made them worse. In support of this conclusion they cite the Aberdeen report by Parlane Kinloch, J. Smith, and J. A. Stephen,[11] and a report from New York City, to show that "there is a serious risk in the usual maternity ward which is absent in the usual confinement at home." In the Aberdeen report the high institutional death-rate is ascribed to the influence of "gross contagion," but the British Maternal Mortality Committee thought that this analysis of conditions should not be assumed to apply to the whole country because the available evidence suggested a different conclusion. They found that the majority of deaths from puerperal sepsis do not occur in epidemics but in single or sporadic cases; nevertheless they recognised the danger of outbreaks of infection, and agreed that the aggregation of maternity cases is by no means free from risk. DeLee and Siedentopf quote reports of 38 epidemics of puerperal infection, of which 35 occurred in the maternity wards of general hospitals. They ascribe a large part of the high institutional mortality to the spread of infection among puerperal patients, to contagion by carriers, and to the presence of gynæcological, surgical, and medical patients in the same building; and they therefore recommend isolation of the clean maternity patients in separate buildings with separate nursing and domestic staff. Fewer outbreaks of infection have been reported in this country than in America, but the danger is a real one, and this recommendation should be borne in mind whenever new hospitals are to be built. The most careful and expert nursing cannot prevent the occasional transport of organisms, and the fact that epidemics of wound infection have been known to occur in clean surgical cases shows that their proximity to obstetric cases may be dangerous.

Ease of intervention and a false sense of security in hospital have contributed to the increase in the number of artificial deliveries, which bring with them an increased mortality risk. Premature and unnecessary intervention have also been alleged as a reason why maternal mortality is higher in the practice of doctors than in the practice of midwives, though this difference must be partly due to the great preponderance of normal cases in midwives' practice. Bethel Solomons [12] holds strong views about the high maternal death-rate in private medical practice. From his experience as Master of the Rotunda he has found reason to ascribe many deaths either to "wilful negligence or abysmal ignorance" on the part of the attendant. Without in any way subscribing to such a damning indictment, it is possible to agree that the practitioner should receive a better obstetric training than has hitherto been available in most medical schools. Bethel Solomons holds that a compulsory period of three to six months' residence in a maternity hospital should be insisted on before a doctor should be allowed to practise. This would raise issues far beyond obstetrics, but need hardly be discussed at present because there are certainly not enough hospital positions available to make it practical politics. Solomons lays stress on good aseptic technique. Infection with organisms carried in the throats of the attendants is not regarded by Solomons as of any importance; he lays stress on the teaching of good aseptic technique. DeLee is a believer in droplet infection, which has been definitely proved in certain epidemics, and he also suggests the possibility of air-borne infection. These communications from Ireland and America are really complementary; the one emphasises the danger of hospital delivery, the other the importance of improved training for the student and post-graduate instruction for the doctor and the midwife in order to improve the standard of private practice. It is clear that a substantial decrease in maternal mortality and morbidity can only be expected if a combined attack is made from many angles.

RAPID DIGITALISATION

BY digitalisation is meant the attainment of the maximum therapeutic effect of digitalis or strophanthin. Auricular fibrillation is, of course, the condition in which the drug exerts the most spectacular effects, and the one in which the efficacy of any special method of administration can best be judged. Dr. Elsie Porter reports [13] the results of giving in a single dose, by various routes, a quantity of digitalis or strophanthin calculated to produce full digitalisation. The estimation of this dose is still a difficult matter, particularly as full therapeutic and toxic effects are not far apart. The investigation was made on cases of auricular fibrillation with rapid heart-rates, to whom no digitalis had been given for three weeks. The drug was given in a single dose by mouth in an amount corresponding to 0·125 c.cm. of tincture (international standard) per lb. of body-weight. Within eight hours the ventricular rate was slowed in nearly all cases, about 40 or 50 beats per minute (the rates being calculated from electrocardiograms). In cases where congestive failure might lead to vomiting the rectal method of administration was used, similar results being obtained with a dosage of 0·1 c.cm. of tincture per lb. body-weight. A third group was treated with intravenous strophanthin. Initial experiments with a dose of gr. 1/100, which would generally be considered quite a high one, showed no slowing of the heart-rate. Finally, a dose of gr. 1/33 was found usually to produce an adequate slowing within half an hour, any larger dose leading to toxic symptoms. The method appears to be a safe one when no digitalis has been given for two or three weeks, except under two conditions: if the patient is subject to paroxysmal fibrillation with high ventricular rates, and if cardiographic changes indicate considerable myocardial damage. Experiments made on the ability of atropine to abolish the slowing of the heart-beat produced by digitalis and strophanthin showed that these drugs act largely or entirely on the vagus.

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[8] Compt. rend. Soc. de Biol., 1929, c., 249.

[9] Comptes rend. de l'Acad. des Sciences, 1933, cxcvi., 69.

[10] Jour. Amer. Med. Assoc., 1933, c., 6.

[11] See THE LANCET, 1929, i., 85.

[12] Medical Forum, January–February, 1933, p. 89.

[13] Quart. Jour. Med., January, 1933, p. 33.

FRACTURES OF THE NECK OF THE FEMUR

FRACTURES of the neck of the femur have an unfortunate tendency not to unite after the manner of most other fractures. Nowhere else in the body, excepting perhaps in the scaphoid bone of the carpus, is there anything like the same incidence of non-union. Dr. W. Eugene Wolcott, in a discussion at the 83rd annual congress of the American Medical Association in New Orleans, stated that in a series of 41 cases, all treated by the Whitman method of fixed abduction in plaster, 15 remained ununited. Subsequent speakers at the congress, while considering this figure unusually high, agreed that the average incidence of non-union was high enough to give rise to grave dissatisfaction. There have been various speculations and assertions about the causes of this failure to unite. The favourite teaching has been that the cause is primarily vascular. The blood-supply to the femoral epiphysis is said to be poor and, being damaged at the time of the injury, is no longer able to keep the head of the bone alive. The blood-supply to the head and neck of the femur reaches it by two routes—through the ligamentum teres and along the retinacula of the neck. The neck of the femur is anatomically a part of the shaft; its blood-supply is therefore arried to it by the periosteum. The vessels lie along he retinacula, give branches to the neck, and then, entering foramina at the junction of head and neck, are the main supply to the head. They are of considerably greater importance than the vessels entering along the ligamentum teres, which supply only the "core" of the head. Dr. Wolcott is investigating by injection methods, using fluid opaque to X rays, the anatomical connexions of these vessels. He has traced branches from the obturator and the internal circumflex arteries into the ligamentum teres, but has not had much success with the vessels of the neck. No anastomosis between the two sets of arteries has so far been demonstrated by him. By direct observation of four cases of non-union subjected eventually to open reconstruction operation by the Whitman method, Dr. Wolcott was able to show that the ligamentum teres had vessels of a respectable size, quite patent and spurting when cut across. Dr. Myron O. Henry, in the same discussion, pointed out that the course of the decalcification of the femoral head demonstrates the presence of an active circulation. Less seems to be known about the fate of the vessels in the retinacula in these injuries, although it is by no means certain that their blockage or severance would of necessity interfere with union.

Apart from vascular failure, non-union has at various times been attributed to lack of sufficient hæmorrhage at the site of the fracture, to prolapse of the capsule between the bone ends, and to the action of the synovial fluid. Prolapse of the capsule was looked for by Dr. Wolcott. He did not find it in any of the four cases on which operation was performed; what he did find in all of them was a growth of fibrous tissue over the end of the femoral neck on the distal side of the fracture. This fibrous tissue had a fairly good blood-supply and bled when incised; its presence in one case and not in another may be of the utmost importance in determining whether union will take place.

In attempting to assess the influence of the form of treatment on the occurrence of non-union, it is of interest to note Dr. Wolcott's view that only 35 of his 41 cases were *efficiently* treated by Whitman plasters. Accurate reduction and immediate and prolonged fixation in extension may have an important bearing on the occurrence of union, despite the fact that callus formation in fractures of the *shaft* of the femur occurs quite readily without accurate and complete reduction. The Whitman method of reduction and retention in plaster is probably the commonest form of treatment at present in use for fractures of the neck of the femur. It would appear from the opinion expressed by American orthopædic surgeons that its success is far from certain. Dr. Frederick Gaenslen made a useful suggestion. He has found that a position of slight valgus at the fracture favours a more rapid union. By practice on artificially produced fractures in the cadaver, Dr. Gaenslen has evolved a method of producing this position during reduction. He first flexes the hip-joint and knee-joint to 90°, and then uses upward traction in the line of the femur to reduce the fracture. Manual thrust in the region of the great trochanter produces the valgus deformity. The limb is finally brought into extension with a moderate degree of abduction and internal rotation. The question arises as to whether it is an impaction produced by the method which results in the success claimed for it, or some mechanical advantage in the position to the vessels running along the neck. Some surgeons, believing in the importance of an initial hæmatoma, inject blood to the site of fracture. It is obvious that the process of union and also of the formation of false joints in fractures of the neck of the femur still provides a field rich in problems.

EPSOM COLLEGE

A SHORT time ago the Epsom College Act of 1932 was passed extending the benefits of the Royal Medical Foundation of the College to medical women pari passu with medical men. The Council has now asked medical women to take up administrative responsibilities—namely, Dr. Laetitia Hutchison (Mrs. Robertson Hutchison) as a member of the Council, and Dr. Christine Murrell as the representative of the Medical Women's Federation on the Conjoint Committee of the College, which now elects the Pensioners and Foundationers. The Council of the College has acted promptly under its new opportunities, and will surely reap advantages, academic and material, from the course of action taken.

Sir Charles Sherrington will deliver the Rede lecture, entitled Mechanism and the Brain, in the Arts School at Cambridge on Wednesday, May 24th, at 5 P.M.

THE Lister memorial lecture of the Royal College of Surgeons of England will be delivered in the theatre of the College by Sir Charles Ballance on Wednesday, April 5th, at 5 o'clock.

WE regret to record the sudden death at Cambridge on Monday last of Mr. Arthur Cooke, senior surgeon and ophthalmological surgeon to Addenbrooke's Hospital.

SPECIAL ARTICLES

FOOD AND HEALTH

THE PHYSIOLOGICAL MINIMUM

THE public conscience is becoming more and more disturbed about the distress which is accompanying prolonged and widespread unemployment. In this country insurance benefit has largely prevented physical suffering, and it is generally agreed that minds have taken more harm than bodies. Indeed, various medical officers of health have given their opinion that there is no conspicuous increase of malnutrition in the areas under their charge, and it is stated that the fall in the cost of living has been so great as to compensate for reduction in unemployment benefit. On the other hand it is urged that a weekly dole which will support a man or family in reasonable comfort for a few months is not necessarily adequate as a sole source of livelihood over many years. And repeated statements that it is unreasonable to ask the unemployed worker to keep a wife and children on the allowances now paid have led people to ask exactly what supplies, apart from shelter and clothing, are required for maintenance of health.

During the past few years we have reviewed or published many reports which provide a partial answer to this question, and we think it will be useful to recall them now by summarising some of the information they contained.

What must the Diet include?

Many of the main facts about good and bad diets were set out by the Ministry of Health's Advisory Committee on Nutrition a year ago.[1] For practical purposes, the committee say, one has to judge a diet in four different respects—namely, the supply of calories (units of energy), the quantity of "first-class" protein, the supply of mineral matter, and the vitamin-content.

Calories.—The calorie needs of the adult male may be taken as 3000 (great) calories per day. The needs of women and children can conveniently be expressed as decimals of the adult man's needs, and the following is the scale used by E. P. Cathcart and A. M. T. Murray in a recent report to the Medical Research Council (Table I.).

TABLE I

	Calories	Man Value		Calories	Man Value
Adult woman ..	2500 ..	0·83	Child 6–8	1800 ..	0·60
Boy of 14 or over	3000 ..	1·00	" 3–6	1500 ..	0·50
Girl " "	2500 ..	0·83	" 2–3	1200 ..	0·40
Child 12–14 ..	2700 ..	0·90	" 1–2	900 ..	0·30
" 10–12 ..	2400 ..	0·80	" 0–1	600 ..	0·20
" 8–10 ..	2100 ..	0·70			

(The calorie needs of persons over 65 years of age may be taken as 2250 per day or a "man value" of 0·75.)

These figures are described as "not very generous."

It is also usual to calculate the distribution of the calories between protein, fat, and carbohydrate.

Each gramme of protein, when burnt in the body, yields 4·1 calories, each gramme of fat 9·3, and each gramme of carbohydrate 4·1. In temperate climates the range for protein is from 10 to 15 per cent. of the total calories in the diet: for fat, from 20 to 35 per cent.: and for carbohydrates 50 to 70 per cent. (If the fat is high the carbohydrate is usually low, and vice versa.) If, say the committee, the absolute amounts of protein and fat fall much below 80 and 50 g. respectively per day (per "man"), or the percentage of calories derived from carbohydrates rises much above 66, the diet may be considered to be in need of improvement.

First-class protein.—"The next criterion is that of the supply of first-class protein. Some proteins replace a greater amount of protein lost to the body by wear and tear than others, and are also more adequate for the purposes of growth. Those which are most efficient in these respects are termed first-class proteins, or proteins of high biological value. First-class protein (for practical dietetics) is to be found only in animal protein, such as that in cheese, eggs, fish, meat, and milk. The amount of first-class protein per 'man' necessary per day can be expressed either in absolute amount or as yielding a definite percentage of the total calories. The absolute amount is about 37 grammes and the percentage content of the total calories is 5. . . (Most middle-class diets have about 55 grammes first-class protein or, in other words, about 7·5 per cent. of the total calories is supplied by first-class protein. Working-class diets frequently fall below the standard.) Any deficit of first-class protein is probably detrimental, for the figure adopted as a standard is not high."

Mineral matter and vitamins.—The remaining criteria can be considered together. Unfortunately, there are as yet no quantitative data of the amounts of the different vitamins essential to the human diet. On the other hand, the foods which are useful in supplying mineral matter are often useful in supplying vitamins. These "protective foods" which prevent deficiency diseases are milk and milk products, fresh salad vegetables and fruits, liver (and liver oils), fish (especially the fat fish and fish roes), and eggs. It will be seen, the committee remark, that if a diet contains milk (and dairy products generally), fish, eggs, and fresh salad vegetables, there is little need to criticise it as regards its mineral and vitamin-content.

"Probably if the diet contains per person 1 pint of milk per day, if cheese is partaken of freely, if one orange or one tomato or a helping of raw salad is taken daily, if 1 oz. per day of butter (or of vitaminised margarine) is given, and if some sort of fat fish, such as herring, appears in the winter menu once a week (or if in default of such fish half a teaspoonful of cod-liver oil is taken once a day) the mineral matter and the vitamin content of the diet are satisfactory."

Conclusion.—It is perhaps essential in conclusion to emphasise the fact that the diet must satisfy all the criteria. If it is not complete as regards calories, first-class protein, mineral matter, and vitamins, it is to be condemned. No amount of calories will make up for any other deficiency, and no amount of vitamins or mineral matter can make up for a deficiency in calories or of first-class protein. A diet must stand four-square upon calories, first-class protein, mineral matter, and vitamins.

Common Faults of Diet

With the enormous range of foodstuffs procurable in Great Britain (the memorandum goes on) no person and no institution with money to spend need have a defective diet. But where economy is to be considered it is otherwise. Defective diets are often the result of an unscientific economy. First-class protein and the protective foods are costly, or at any rate are accounted expensive.

Calories.—Most institutions if not most individuals have discovered what are the foods which are extremely cheap sources of calories. They are flour, oatmeal, bread, the pulses, dripping, margarine, treacle, sugar, and, not far behind, butter, cheese, jam, bacon, and dried fruits. Sometimes, however, the proportion of fat is too low.

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[1] The Criticism and Improvement of Diets. H.M. Stationery Office. 1932. 3d. See THE LANCET, 1932, i., 782.

First-class protein.—" It is not often that the diet of an institution is found to be deficient in first-class protein, but the individual's diet frequently is so. Though this latter is sometimes the result of individual taste, it is usually due to economy. . . Where economy must be considered, the use of cheese, herring, fish roe, and sprats is advisable, and fortunately none of these needs much cooking. Other reasonable sources of first-class protein are cod, milk, ox liver, imported beef, and rabbit. If skimmed milk is obtainable, the first-class protein ration can be obtained as cheaply as with fish roe."

The protective foods.—" It is in the protective foods that deficiency is likely to be met. And first upon the list of protective foods comes milk. It is generally agreed that one pint of milk per head per day is advisable, though the milk consumption in this country does not reach half that figure. The value of milk in a diet is now generally recognised. (Apart from its value as a protective food, milk is not dear for calorie value—i.e., 10*d.* per 1000 calories—nor for its protein ration, 6*d.*–7*d.*) Skimmed milk, where obtainable, is very valuable as a cheap protective food . . . ."

> " The question is bound to arise whether *butter* or *margarine* be employed as one of the sources of fat. Economy suggests margarine. There is the possibility that butter may be devoid of vitamin D in winter and, consequently, if butter is being relied upon as a protective food it would be best to specify butter such as New Zealand butter, which is fairly constant in its vitamin D content. Margarine can be obtained which contains vitamins A and D, and if margarine is used such a product should be specified . . . ."

" Finally, it may be found that a diet is deficient in vegetables, or that the latter are limited merely to potatoes and 'greens.' . . In England and Wales there is little excuse for this, for there is an abundant and cheap supply of tomatoes, celery, hardy lettuce, endive and watercress in the autumn and winter. Indeed, watercress is abundant most months of the year, and relatively cheap. A regular and varied supply of these foods, not necessarily in large quantities, should be used to improve a diet deficient in the vegetable type of protective foods. Other additions which it would be wise to make are carrots (valuable as a source of vitamin A), and oranges and lemons, which are a source of the antiscorbutic vitamin."

Minimal Cost of a Sufficient Diet

Various attempts have been made to estimate the minimal cost of a sufficient diet, and two of these have appeared in our columns comparatively recently.

V. H. Mottram [2] prefaces his calculations by pointing out that the lowest conceivable diet upon which subsistence with efficiency is possible, consists of 7¼ oz. of fresh herrings, 1 lb. 7 oz. of oatmeal, and 4 oz. of cabbage—at a cost (in 1927) of about 6*d.* per day. But of course, he says, such a subsistence diet is impossible.

> " No one could swallow 1½ lb. of oatmeal a day, nor tolerate the monotony of the diet, even supposing he had the physiological knowledge to purchase such a diet and the practical knowledge of how to cook and serve it so that it were not revolting. One thing which has become abundantly clear in physiological research is that appetite, as apart from hunger, has much to do with the proper digestion, assimilation, and utilisation of food. The physiological engines of the body are guided partly by the psychological condition of their owner. Consequently no subsistence diet, however admirable from the theoretical point of view, such as the one given, can be accepted as practical."

Starting from the basis that the diet must be varied and palatable and not depart markedly from what is acceptable to a working-class community, Mottram came to the conclusion that "with skilful purchasing in the cheapest market, based either on a long experience or on a knowledge of dietetics, a dietary can be obtained at so low a cost as 6*s.* 3*d.* per week per adult male, so long as the occupation followed is not a very strenuous one. Below such an expenditure, he said, it is unlikely that bodily efficiency could be purchased.

> " This sum, therefore, sets the limit from which we may proceed to estimate what minimal subsistence will cost. It must be realised, however: (1) that this figure was arrived at when food prices were low, and that any attempt to put it into practice must allow for fluctuations in the prices of foods; and (2) that it demands skill in laying out of money which only one or two housewives in a hundred appear to have. Although this figure is used throughout the rest of the discussion, my own prejudice is in favour of raising it to 7*s.* per week."

Accepting 7*s.* per week per man as Mottram's final estimate, it needs correction in accordance with the fall in the cost of living. In 1927 the cost of food was estimated at 61 per cent. above pre-war values, whereas in February, 1933, it is only 22 per cent. higher. With a corresponding reduction, Mottram's 7*s.* thus becomes about 5*s.* 4*d.*

G. P. Crowden,[3] about a year ago, also reached 7*s.* as the physiological minimum basis per man-value per week. His calculations presuppose, he says, " the most economic purchasing and household management by the mother in the family—an assumption which is rarely justified," and they were made on the basis of a list of foodstuffs compiled by the North Islington welfare centre in July, 1929. This gave a man-value of 8*s.* 2½*d.*, which Crowden corrected to 7*s.* because the cost of living had fallen; and it must be further corrected to about 6*s.* 8½*d.* at present prices.*

Somerville Hastings [4] quotes Caradog Jones's estimate of 6*s.* 3*d.* per week (1931).

Finally, we may refer to G. C. M. M'Gonigle, whose paper was summarised in our issue of March 4th (p. 471). His figure is the lowest, for he believes that in the spring of last year, in the markets of Stockton-on-Tees, is was possible to buy enough food for 5*s.* per " man "; and corrected to fit the further fall in the cost of food this comes to about 4*s.* 10*d.* The estimates may now be summarised as follows (Table II.).

TABLE II.—*Estimated Cost of Subsistence Diets per " Man " per Week*

	Estimate			Corrected to February, 1933	
	s.	*d.*		*s.*	*d.*
Mottram (1927)	7	0	....	5	4
Crowden (1932)	7	0	....	6	8
Caradog Jones (1931)	6	3	....	? 5	10
M'Gonigle (1932)	5	0	....	4	10

In considering these figures it must be borne in mind that the Ministry of Labour's estimates of the rise and fall in the price of foodstuffs are only a rough generalisation. Further, as Mottram says, some modicum of variety is essential. " Psychology invades the problem, for man is no Robot, whom you can stoke with the same monotonous fare day after day."

The Feeding of Children

The problems of the family can also be looked at in the light of institutional experience. The Advisory

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[2] THE LANCET, 1927, ii., 898.

[3] Ibid., 1932, i., 899.

[4] Ibid., 1932, ii., 1185.

* Crowden's diet gives 3570 calories per day. In commenting on this and other estimates (*Week-end Review*, March 4th) Mottram says: " Clearly 5*s.* per week per adult male is a figure below which it is not safe to go if the food is bought retail, and the natural assumption is that if 7*s.* supply some 11 per cent. too many calories and 5*s.* some 10 per cent too few, the sanest figure to adopt for practical purposes is 6*s.* per week per adult male."

Committee on Nutrition[5] have inquired into the diets offered in children's homes maintained by poor-law authorities, and have made recommendations about their improvement.

> "In homes visited in the North of England," they say, "the average weekly cost of food per child was said to be 3*s.* 11¼*d.* in the case of certain scattered homes containing 341 children; 4*s.* 8*d.* in certain grouped cottage homes containing 260 children; and 5*s.* in other grouped cottage homes containing 550 children. In each case most of the food was obtained from stores at contract prices. It is interesting to note that the cost of food per head in these homes exceeded that in homes visited in the south (so far as we could ascertain), notwithstanding that on the whole prices seemed lower than in London and the home counties. The additional cost was reflected in the better standard of feeding in the northern homes."

The weekly cost per head of the meals which they suggest in an appendix to their memorandum would vary according to the locality of the home, the number of children in it, and the conditions under which the foodstuffs are purchased. "In a home containing about 200 children we estimate that the weekly cost, allowing 1 pint of milk per child daily, would be about 4*s.* 6½*d.* per head if all provisions were bought at contract prices." (This report is dated November, 1931, and correction for the fall in the cost of foodstuffs would bring this figure down to 4*s.* 3*d.*). Sir George Newman[6] thinks that unless the numbers are large and there are facilities for obtaining foods at contract rates, it may be assumed that 5*s.* 6*d.* per head weekly is a reasonable price to pay. "In schools for delicate children" he adds, "there is, however, a good deal to be said in favour of increasing the milk ration to 1½ pints daily (in which case the supply of meat and fish may suitably be reduced) and of substituting butter for margarine. This will probably raise the cost to approximately 6*s.* per week."

In 1927, after studying the dietaries given by a large number of poor-law authorities, the National Association for the Prevention of Infant Mortality gave the following as the basis of a suitable dietary for children between the ages of 1 and 5 years.[7]

> *Daily.*—One pint of milk, the juice of orange, tomato, grape or lemon. An apple, orange, tomato; some salad or lemon juice (for older children). Two to four ounces of meat or fish, or one egg. Cod-liver oil if the butter ration is reduced.
>
> *Weekly.*—Two to four ounces of butter. Two eggs.

Milk in London costs about 3*d.* a pint or 3½*d.* in the winter. Seven pints cost 1*s.* 9*d.* or 2*s.* 0½*d.*

High Rents and Insufficiency of Food

Food is only one of the necessities of life, and the amount of money available for it depends on the cost of the others. Mottram guesses that 60 per cent. of the income of a person at subsistence level should go towards nourishment, but it is clear that circumstances may decide otherwise. Thus it might be shown that a reasonable average rate of wages or unemployment benefit proved totally insufficient to maintain the health of particular families because, for example, the rent paid was higher than it should be.

It is not our object here to examine the general adequacy of the sums now paid weekly to working-class families in or out of employment; but it is sufficient to demonstrate that there is a problem to be faced. Two or three quotations will suffice for this purpose.

Crowden gives a few examples of family budgets collected in London showing physiologically inadequate expenditure on food; and without drawing conclusions from his insufficient data he notes in passing that on the average the amount spent on rent was about 35 per cent. of the total weekly income, or twice the percentage of 17 on which the Ministry of Labour bases its present calculation of the cost of living index.

> "If a family undertakes such a fixed weekly commitment as rent," he says, "and then finds by bitter experience that insufficient money is left for the provision of adequate food . . . it is inevitable that debt or breakdown in health, or both will follow. . . . Whatever may be the urgency for housing undertakings paying their way, it is bad business from the national health point of view if such can only be achieved at the expense of family health."

M'Gonigle, in the course of his investigation of the standard of living in two parts of Stockton, analyses the weekly budgets of 22 unemployed families who had moved to a new housing area. Their mean income was £1 10*s.* 5*d.* a week, of which 31·3 per cent. (9*s.* 6*d.*) went in rent, 29·3 per cent. in "other necessary expenditure" (including clothing, clubs, and insurance), and 36·7 per cent. in food. The mean "man value" of each family was 3·8, and the amount spent in food per "man" per week was 2*s.* 10½*d.* The diets thus obtained were compared with a "normal" diet, as follows:—

Normal diet.	Unemployed families. Quantities	Unemployed families. % of normal*
First-class protein (37 g.) ..	22·78 g.	55·4
Total protein (100 g.) ..	65·79 g.	59·2
Fats (100 g.)	73·72 g.	66·3
Carbohydrates (400 g.) ..	419·0 g.	94
Calories (3000)	2696	80

* 10 per cent. is deducted for wastage.

It will be noted that the calorie value per "man" in these families was 2696; whereas five employed families on the same estate gave an average figure of 4277. M'Gonigle, calculating that a "normal" diet could be obtained (last spring) at 5*s.* per "man," says that a family consisting of man, wife, and three children, aged 8, 10, and 12 years, ought to spend £1 1*s.* 6*d.* on food. The income of such a family, if unemployed, would be £1 9*s.* 3*d.* The sum of 7*s.* 9*d.* would thus be left for other purposes.

Cathcart and Murray found eight families in Cardiff and twelve in Reading in which the mean calorie value was less than 2500, and three in which it was less than 1800. This shortness of food was not attributed solely to the smallness of the income, but partly to incapacity or improvidence. They came to the conclusion, however, that with very restricted incomes a distinctly smaller proportion of the weekly wages is devoted to the buying of food in these English towns than in Scottish towns—largely because of the higher rents in the south.

Somerville Hastings quotes the annual report of the medical officer of health for Hammersmith (1931), who "examines the budgets of a good many working-class families, both employed and unemployed, and finds that when rents are paid there is in many cases a very small surplus left to provide food, clothing, and other necessities of life. Amongst the unemployed this may be, according to his statements, as little as 2*s.* 8*d.*, 2*s.* 4*d.*, 1*s.* 11*d.*, or even 1*s.* 7*d.* per head, and amongst the employed may come down as low as 3*s.* 8*d.* or 2*s.* 9*d.*" Hastings points out that townspeople with large families are often compelled to pay relatively large sums for accommodation because owners and agents refuse to let rooms to people with children.

We note that the *Week-end Review* (March 11th, p. 264) has formed a small committee which is to make a statement on the minimum standard of maintenance necessary in food, heat, and shelter.

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[5] Diets in Poor-law Children's Homes. H.M. Stationery Office. 1932. 3*d.* See THE LANCET, 1932, ii., 782.

[6] Annual report of the chief medical officer to the Board of Education for 1931. H.M. Stationery Office. 1932. 2*s.* 6*d.* See THE LANCET, 1932, ii., 1282.

[7] See THE LANCET, 1927, i., 110.

This committee includes an economist, a physiologist, a housewife, a doctor, and a social worker, and it is asked to report by the end of this month.

MEDICINE AND THE LAW

"Misadventure by Narcotic Drugs"

THE inquest on Mrs. Beech, begun at Paddington on Feb. 17th and adjourned to Feb. 28th for an analysis of certain organs, was concluded by Mr. Ingleby Oddie on March 1st. The coroner reached his decision without a jury and recorded a verdict that death was due to misadventure by narcotic drugs. As will be seen, the suggestion of suicide was negatived and there was no evidence of criminal negligence in medical treatment; there was however a prolonged inquiry into the effect of various narcotics; this disclosed a sharp difference between the opinions of Home Office experts and the practice of clinicians especially in respect of the use of nembutal.

Mrs. Beech, aged 34, died on Feb. 13th. She had come to London on her way abroad. Being taken ill on Wednesday, Feb. 8th, she went to see her medical attendant, Dr. C. H. Atkinson, complaining of nerves, insomnia, and colic. He had first attended her in April, 1931, before which date she had been taking omnopon; the dosage of this drug was reduced and she came off it in about three weeks. He next saw her on Dec. 26th, 1931, when she had been taking alcohol and had gastric trouble as well; she had been taking paraldehyde 2½ drachms at night and was also having gastric treatment. Dr. Atkinson was informed subsequently of other drugs being taken. In October, 1932, she came again under his treatment; there was investigation and treatment for duodenal ulcer. Her own doctor had been giving her luminal (substituting somnifain later) and paraldehyde, but by this time the dosage was greatly reduced. The drugs were given because of her mental condition; he was particularly anxious not to give her morphia. On Feb. 8th she was very excitable and he gave her 3 drachms of paraldehyde and 5 grains of medinal. On the Thursday he gave another 3 drachms of paraldehyde. On Friday she told him she had taken 4 ounces of sal volatile in two portions somewhat diluted. He thereupon called in Dr. R. D. Gillespie, who inquired fully into the history of the case and the details of drugs taken. Mrs. Beech, according to Dr. Atkinson, was neither a drug nor an alcohol addict, but, during periods of mental upset, she would take drugs and drink sal volatile or even scent. Dr. Gillespie gave her 3 drachms of paraldehyde followed by two further doses of 2 drachms each. On the Saturday morning she was not much better; he then gave her more paraldehyde and another dose again at night, administering in addition 4½ grains of nembutal. She had not taken nembutal before; he prescribed it to reduce the need of a large quantity of paraldehyde. Mrs. Beech was then moved to a nursing-home where she had three nurses and was constantly watched. That night she was restless and excited under the influence of the two drugs. Very early on Sunday she was given 7½ grains of medinal, then 3 drachms of paraldehyde, followed by a further 2 drachms of the same in the afternoon. At 9.15 P.M. she had 6 grains of nembutal; during the day she had 60 grains of potassium bromide in three 20-grain doses. On Monday, after further doses, she had six hours' sleep and awoke apparently quite bright. She talked, read, brushed her hair, attended to her nails, and spoke of her forthcoming visit to Paris. She was still restless and tried to sleep but failed. She was then given 7½ grains of medinal and gradually lapsed into unconsciousness from which she never recovered, death occurring at 3.30 P.M. Post-mortem examination, according to Sir Bernard Spilsbury's report, disclosed no cause of natural death.

The coroner ordered an analysis, and this, undertaken by Dr. G. Roche Lynch, showed 1 grain of nembutal in the liver and ⅙ grain in the kidneys; there was a smell of paraldehyde in the body, but no trace of medinal. Dr. Roche Lynch believed death to be mainly due to the use of medinal and nembutal; the use of potassium bromide and paraldehyde were to some extent contributory; he thought some of the doses were heavy; he could not exclude the damaging effect of the dose of sal volatile. Sir Bernard Spilsbury, having heard this evidence, agreed. He said he could not entirely exclude the effects of the sal volatile; though it had been taken some days earlier, there were still signs of its injury to the mucous membrane of the œsophagus, stomach, and duodenum. It had caused irritation to the stomach, accounting for the patient's restlessness.

THE CORONER'S VIEW OF THE EVIDENCE

This, said the coroner, perhaps explained why Dr. Gillespie's treatment did not produce the desired effect; paraldehyde sufficient to give six hours' sleep had produced only one hour. The sal volatile, he added, had an effect which necessitated the continued use of large doses of barbiturates. One theory, supported by Dr. J. A. Ryle, was that the ammonia in the sal volatile set up gastric uræmia which might account for death, but the coroner was unable to find characteristic history in confirmation. The coroner did not believe the sal volatile was taken with suicidal intent. The patient's doctor had told her not to take alcohol; if she felt the need of stimulants, she was advised to take sal volatile. She took an overdose to relieve her symptoms, not realising what she was doing.

Dr. Gillespie, said the coroner, believed the failure of his treatment with drugs was caused by the seriousness of the patient's mental condition; he had proceeded to give large doses and to vary the drugs, hoping that they would master the sleeplessness and excitement. "In my opinion," he continued, "the doses, though large, were not excessive; taking into consideration what his special knowledge of the patient was, and the fact that she had swallowed the sal volatile, Dr. Gillespie cannot be criticised." It was true that he was dealing with what Sir William Willcox considered a dangerous drug. Nembutal had been used very largely in similar doses without ill-effects. Once or twice there had been alarming symptoms, but no death was traceable directly to nembutal, though there were cases where nembutal might have played a part in death. It was evidently a dangerous drug and one whereof the effects should be carefully watched. Dr. Gillespie had first given 4½ grains, which the coroner considered not excessive from the evidence. He then gave 6 grains "which again I cannot say was excessive." It was reasonable to believe that, in view of the patient's better condition on the Monday morning, the effect of the drugs had passed off. In view of her condition that morning the coroner saw nothing to criticise in the 7½ grains of medinal which the nurse administered under Dr. Gillespie's orders that day. Paying a tribute to Dr. Gillespie's experience and care, Mr. Ingleby Oddie said there was no evidence of negligence and certainly there was no gross negligence. Dr.

Gillespie was entitled to rely on past experience and on his knowledge of the effect of similar doses of the drug. Mrs. Beech died from the combination of drugs she had taken, including the sal volatile.

EVIDENCE OF THE TOXICITY OF NEMBUTAL

The evidence of Sir William Willcox made clear his profound distrust of the barbituric acid group of drugs. He spoke of their toxic effect upon the brain and other organs. In his opinion death was due to the combination of all the drugs, with (as a possible contributing cause) the sal volatile. He appreciated that the patient had been accustomed to take some of these drugs, but barbituric acids do not produce tolerance as in the case of morphia. It was in his opinion utterly untrue that nembutal was a safe drug. He would prefer not to say what was a safe dose of it. The drug was only recently introduced. When veronal was first brought in, the dosage was reduced by half (from 10 to 5 grains) after a few years' experience. He was aware of four fatal cases following the administration of nembutal for purposes of anæsthesia. In three of these the dose was 7½ grains. It caused fatalities by action on the brain. It was a tissue poison, poisoning the kidneys. It might cause pneumonia. He had seen a case of pneumonia following a dose of 4½ grains. It might also poison the heart. The condition of the patient, very gravely ill, made the case most difficult to treat. He was not prepared to say she might have died from the sal volatile alone, but this was possible in view of her state of health. He was asked by the coroner whether patients, becoming unconscious after a dose of nembutal, can completely recover and then relapse. He said this was possible. The doses prescribed for her were within limits which are frequently prescribed, but he would not himself prescribe them. He would not personally prescribe nembutal at all. He declined to say what he would have prescribed in the circumstances. Dr. Gillespie, said Sir William, had adopted a treatment which is very generally adopted; but he himself was so deeply impressed with the many cases he had seen of poisoning from the barbiturate group that he would avoid them. He would not criticise others who used them, but he desired that their dangers be realised. In cross-examination Sir William said that in his judgment there was, in the barbituric acid group, only a small margin between the therapeutic dose and the dangerous dose. Dr. Mapother had said he had frequently given 6 grains, but he would have been in the danger zone if he had given 12 grains. Nembutal might cause death without producing observable effects. Asked if there were any signs of nembutal poisoning in Mrs. Beech's case, he replied that the only signs were the absence of signs of disease and the presence of nembutal in the liver and kidneys. The analysis was proof that the full dose was given. Tissue might be poisoned without observable signs. He agreed that Dr. Gillespie had no reason to suspect that the patient was particularly susceptible to nembutal and had good reason to believe she was not. She had taken drugs of the barbiturate group such as luminal and dial. The cases he had known where patients recovered consciousness after taking nembutal and then died were three unpublished cases occurring in one day where the drug was in part given intravenously before a severe operation. He agreed that they were complicated and not pure cases: one must not attach too much importance to them. One other case was a case of pneumonia on Feb. 28th with special susceptibility. A passage was put to him from an article in THE LANCET (1932, ii., 136) by Dr. D. Curran and Dr. L. Minski, as to nembutal in doses of from 3 to 6 grains being "certain in its action, devoid of risk, and free from unpleasant after-effects." He entirely disagreed with it. His objection to nembutal was that it was a new drug with very decided therapeutic action, easily misused. He knew it was very much used. He was aware of no case in medical literature, apart from those mentioned by him, of a direct fatality from nembutal. The drug was somewhat uncertain in its action and he had heard of unpleasant symptoms following its use.

EVIDENCE ON THE OTHER SIDE

Dr. Mapother's evidence on the other side described the extensive use of nembutal at the Maudsley Hospital. He had given it to 328 patients and had administered 6116 individual doses. The maximum quantity in 24 hours had been 13½ grains (4½ grains in three doses). Other patients had had 12 grains in 4-grain doses. The average dose was 4 grains: sometimes 6 had been given. The drug could be regarded as very safe for the particular purpose for which it had been used, to produce sleep in quiet cases, or to obtain a definitely sedative effect in cases of restlessness. It had been given to a patient over a period of weeks. Asked if there had been any unfortunate consequences in the hospital from its use, he said that two patients on the occasion of their first dose had shown alarming symptoms, rather sudden collapse followed by quick recovery. They were patients in bad condition. The dose had been 4½ grains. The same dose was repeated without ill-effect. Nembutal was a drug which was excreted quickly; its effect was transitory. At the Maudsley Hospital it had been used in combination with medinal, bromide, chloral, hyoscine, paraldehyde, and somnifain. Dr. Gillespie's doses were, in his opinion, not excessive. Dr. Douthwaite, assistant physician at Guy's Hospital, also gave evidence in support of Dr. Gillespie's treatment. To show that 1½ grains of nembutal (which Dr. Roche Lynch appeared to have regarded as the maximum dose) was not likely to have a serious effect, Dr. Douthwaite swallowed a capsule of 1½ grains in court. He said he himself had been responsible for giving 6-grain doses in 20 cases. In one case the patient had had 15 grains of medinal the previous night. Death from nembutal occurs in a state of coma: Mrs. Beech had been awake on the Monday, after the nembutal: her death could not be due to this drug. Sir Maurice Craig, who also gave evidence, considered that Dr. Gillespie was wise in trying to get Mrs. Beech off paraldehyde and to substitute barbiturates. The last edition of Hale-White's Materia Medica gives the dose of nembutal as from 3 to 9 grains. If the patient was awake and active on the Monday morning, this showed that the effect of the drug had passed off. Dr. Bernard Johnson dealt in the witness-box with the safety of administering paraldehyde and nembutal in combination. Dr. Gillespie had previously described his own experience of the combination of nembutal and potassium bromide.

Thus the proceedings, while attaching no criminal liability to anyone, established a definite cleavage of opinion as to the safety of certain drugs. An important issue remains to be settled in the light of further experience, but it is significant that the coroner, in spite of the evidence of its dangerous nature, saw no negligence in the careful use of nembutal.

Ear-cutting for Rickets

During an inquest at Llanelly last week evidence was given of the curious Welsh custom of cutting the ears of babies as a cure for rickets. The mother of a 4-months-old child, assuming that the child was suffering from rickets, had taken it to a Mrs. Katherine Rosser, of Trimsaran, to have its ear cut. Medical evidence showed that death was due to heart failure following influenza; the child was not suffering from rickets at all. Mrs. Rosser admitted in the witness-box that she had cut the child's ear according to the local custom; she said that large numbers of adults and children were brought to her from the country districts for this purpose. A small cut is made inside the ear with a razor. Students of folklore and magic may be aware of similar custom elsewhere, and may be able to tell us whether the cut is made with the idea of releasing an evil spirit.

Mrs. Rosser declared that she received no pay for her services. The coroner warned her that this ear-cutting practice was illegal and dangerous, and must be stopped at once; she was fortunate that the evidence had not disclosed circumstances in which she would have been liable to a criminal charge. Dangerous the practice certainly is, both because the combination of unskilled diagnosis with useless remedy may easily mean the fatal exclusion of proper medical treatment, and because magical operations may not be conducted antiseptically. Illegal the practice is if, infringing Section 12 of the Children Act, it amounts to neglect of a child through failure to provide proper medical treatment. It may amount to manslaughter if the recourse to magic can be said to have caused or accelerated the patient's death. Merely to make a small cut in a person's ear at his or her request, for whatever purpose, involves in itself no criminal or civil liability. *Volenti non fit injuria.* Such a voluntary operation is no more illegal than the piercing of the lobe of the ear to facilitate the wearing of an ear-ring. Ear-rings, also, by the by, are sometimes associated with magic significance.

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Sir John Broadbent, in reply, reminded the audience that this was the 159th anniversary dinner, the Society having been founded by Lettsom in 1773. He sketched the life of Lettsom, the quaker physician, who was born in the West Indies, was apprenticed as a surgeon and apothecary in England and returned without any diploma to the West Indies, where in a short period he made a considerable sum of money as an unqualified practitioner. With this money he returned to England, was licensed by the Royal College of Physicians, acquired a large practice, and founded the Medical Society of London, to which he presented its first home. The Society had at its origin, said Sir John, 30 physicians, 30 surgeons, and 30 apothecaries, and it remained what he would describe as a polyvalent society with a varied programme for its activities. He concluded by a defence of the exclusion of women from the Society, in which he was ingeniously able to exhibit his gallantry.

The toast of the Guests was proposed by Mr. Donald Armour, who alluded to the intellectual prominence enjoyed by the family to which Lord Hanworth belonged, and made appropriate references to Sir Holburt Waring, Dr. J. S. Fairbairn, and Lord Dawson, the presidents of the three diploma-granting Colleges, while the last he described as forming a liaison between the aristocracy and the mass of the profession by combining the office of the president of the Royal College of Physicians with that of the British Medical Association. In coupling the toast with the name of Sir Harold Fawcus he congratulated him on the extension of his post as Director-General of the Army Medical Services.

Lieut.-General Sir Harold B. Fawcus made an excellent recruiting speech. Why on earth, he asked, did the young doctors of the present day seem to regard commission in the fighting services as constituting some separate sort of medical life ? Most of those in the room, he said, would have served during the war and must know that medicine in the services was not separated from general medicine, and he failed to understand why there should be difficulty in recruiting the young officers. The pay was good and was paid by the State, but he did not think that money entered greatly into the question. If a belief that a career in the R.A.M.C. provided but limited chances of professional work was commonly held it could be shown that this view was rubbish by a simple inspection of the annual reports issued by the Department.

The guests included the Presidents of the Royal College of Physicians of London, the Royal College of Surgeons of England, and the British College of Obstetricians and Gynæcologists, the Master of the Apothecaries' Society, the Medical Directors-General of the Navy, Army, and Air Force, Sir Farquhar Buzzard, the Presidents of the Royal Society of Medicine, the Chelsea Clinical, Harveian, Hunterian, and West London Medico-Chirurgical societies, and the editors of the *British Medical Journal* and *The Lancet*.

IRELAND

(FROM OUR OWN CORRESPONDENT)

APPOINTMENT OF AN ASSISTANT MEDICAL OFFICER OF HEALTH

A STORMY protest was made at a recent meeting of the County Dublin board of health when a letter was read from the Department of Local Government and Public Health refusing the consent of the Minister to the proposal of the board to make an appointment as assistant medical officer of health and school medical inspector from the ranks of the dispensary medical officers in the county. The Minister pointed out that the duties of the post were radically different from those of a dispensary medical officer and district medical officer of health, and that experience in the latter capacities was not sufficient qualification for the special duties of the post. He directed that the board should refer the appointment to the Appointments Commission, and he sanctioned a salary of £600 a year with vouched travelling expenses.

ANNUAL MEETING OF THE BRITISH MEDICAL ASSOCIATION

The preparations for the annual meeting of the British Medical Association to be held in Dublin in July next are well advanced. The authorities of the Irish Free State, of the city of Dublin, and of the two universities are giving hearty support to the local committees. Among the social events connected with the meeting, in addition to the annual dinner of the Association, receptions or garden parties will be given by the Government of the Irish Free State, the Trinity College, University College, Dr. Steevens' Hospital, the Rotunda Hospital, the Leinster branch of the Association, and others. A provisional programme of the scientific proceedings will shortly be published.

PARIS

(FROM OUR OWN CORRESPONDENT)

AN ASSOCIATION OF PRACTITIONERS

A RECENT sinister concatination of circumstances has thrown an undeservedly macabre light on the French medical profession. There is the scandal, still fresh in the memory, of the medical examinations for hospital appointments in Paris. There are also the unkindly reflections made on the medical profession as a whole as an elusive tax-payer. The trade-union spirit of various medical organisations has also attracted disconcerting attention and disparaging comment. A happy contrast to this sombre picture is a movement, not yet a year old, which shows what a spirit of disinterested coöperation and scientific research the general practitioner is capable of developing when given the opportunity. The Assemblée Française de Médecine Générale was established on March 15th, 1932. Its subsequent career has recently been reviewed in *Le Siècle Médical* by its enterprising secretary-general, Dr. Godlewski. It has numerous sections scattered throughout France, and a programme which looks at least a year ahead. For each general session, which takes place ten times a year, a special subject is chosen for study and discussion. The practitioner is thus given time to collect and sort his material for inclusion in the pool. This body already has its special organ, *La Médecine Générale Française*. Last May the subject chosen for discussion was rural tuberculosis. The subject chosen for the following session was cancer houses. It was the general opinion that, though they might exist, they were certainly rare. On the other hand, the mass of available information pointed to a very uneven distribution of the disease both in time and place. The subject chosen for the third session was the regional clinical manifestation of alcoholism. The parliament of practitioners was in blissful harmony over the ill-effects of spirits and the iniquity of the Government in putting a premium on intemperance. But where wines and cider were concerned, there was a general tendency not to brandish the hobnail liver in the face of its alleged and hypothetical owner. A discussion on alcoholic polyneuritis suggested the existence of centres and epidemics of this disease associated with a too generous use of arsenic in agricultural or industrial activities. The subject chosen for the meeting last December was infections associated with domestic animals, notably cattle. On this occasion much new and interesting clinical light was thrown on undulant fever and allied conditions. At a more recent meeting, devoted to conjugal tuberculosis, the consensus of opinion was in favour of this condition being rare, even when it was subjected to the searching light of serial radiological examinations. If this movement develops as favourably as it has begun, records of invaluable clinical observations collected by practitioners on generations of stationary rural populations may result.

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PUBLIC HEALTH SERVICES

The Typhoid Fever Epidemic at Malton

THE report to the Ministry of Health on the outbreak of typhoid fever in Malton, Yorkshire, last November has just been published.[1] The main facts appear to be as follows.

The town of Malton, an old country market town with no prominent industries, is situated on the river Derwent in the North Riding of Yorkshire. It stands on permeable oölitic limestone and calcareous grit except for the clay bed of the Derwent, which clay outcrops at its junction with the middle oölite on the north bank. Although Malton is divided into two unequal parts (Old Malton, with a population of 1000, to the north-east of New Malton, which has a population of about 3500) the water-supply and sewage disposal is the same for both. The water-supply has been derived since 1868 from a shallow well, 14 feet deep, known as the Ladywell. Two hundred yards to the west of the Ladywell is a pumping station which raises the water to a reservoir and water tower, half a mile further west, of a total capacity of 300,000 gallons. The rising main between the pumping station and the reservoir supplies many houses en route. The water-supply is constant and was delivered untreated in any way. As regards sewage, out of 1164 inhabited houses 898 were served by cistern-flushed water-closets, 611 had pail privies, and 10 midden privies. The sewers discharge directly into the river Derwent without screening or other treatment. The contents of the pails are tipped outside the town and sold to farmers for manurial purposes, "a proceeding which is not free from danger."

As regards previous incidence of diseases of the enteric group the late Dr. Bruce Low reported[2] in 1892 that enteric fever and diarrhœa had persistently recurred in the town during the previous 20 years. It was known that when flooded the river Derwent was liable to overflow into the Ladywell and "muddy the water." Dr. Bruce Low confirmed the fact that pollution was intermittent, and recommended that the question of obtaining for the town a sufficient and uniformly wholesome water-supply should be considered without delay. Nothing, however, was done except that the banks of the Derwent were raised in 1895 in order to prevent overflow, and when floods threatened pumping was stopped until they had subsided. In the past 21 years 14 cases of enteric fever were notified.

The first notification in the outbreak at present under review was on Oct. 9th, 1932. Following that the notifications were as follows:—

Week ending—		Cases	Week ending—		Cases
Oct. 22nd	..	1	Dec. 3rd	..	6
„ 29th	..	78	„ 10th	..	2
Nov. 5th	..	64	„ 17th	..	1
„ 12th	..	58	„ 24th	..	1
„ 19th	..	26	„ 31st	..	Nil.
„ 26th	..	11			

Dr. W. V. Shaw, one of the medical officers of the Ministry, arrived on Oct. 25th when about 30 cases had been notified, and confirmed the opinion of Dr. L. C. Walker, the M.O.H. of the urban district, who is also in general practice in the locality, that the disease was probably water-borne, in view of cases being of both sexes, all ages, and many occupations, and scattered throughout the town, and of the fact that the Norton urban district, a contiguous area with an entirely separate water-supply, was relatively free from cases. The action taken up to the time of Dr. Shaw's arrival had been to remove a heap of cattle manure which was adjacent to the well, to advise the inhabitants by crier and handbills to boil all water, and to take over the local cottage hospital and use it as an isolation hospital. The above measures were adopted on Oct. 24th. At a special meeting of the council on Oct. 26th the following recommendations by Dr. Shaw were adopted and put in hand immediately: (1) sterilisation by chlorination of the water, pending the resort to an alternative supply which was not immediately available; (2) removal to hospital of all notified cases; (3) the offer of protective inoculation with antityphoidal vaccine by the M.O.H. or private practitioners; (4) a further warning that all drinking water should be boiled pending such time as it could be sterilised in bulk. The chlorinating plant was installed by midnight on Oct. 27th.

THE SOURCE OF POLLUTION

The next step was to search for the source of pollution. A potential danger, the river Derwent, could be provisionally excluded as the month of September had been remarkably dry and there were no floods. The first patient to be notified (on Oct. 9th) was in the public assistance institution (Spring Hall), which is situated 300 yards to the west of the Ladywell and at a higher level. He was a man of 23 who had been admitted on Sept. 23rd. On or about Sept. 20th he had reported to his local doctor (he lived on a farm some miles away), who found him to be feverish without definite physical signs. As the fever persisted he was sent into the institution, where he was placed in the male sick block, which is separated from the female sick block by the "house." The nursing staff consisted of a charge nurse and an assistant nurse living in the male and female sick blocks, and having charge by day of three wards each, on two floors. By night an inmate acted as attendant in each block, the nurses being "on call" if necessary. The patient (X) was seen by Dr. Walker on the day of his admission and again on Sept. 26th, when a note on his record card was made "To be treated as typhoid." The nurses aver that they were not told of this, and knew nothing of the suspected nature of the disease until they were told by Dr. Parkin, Dr. Walker's deputy, to treat the "case as one of infectious disease" on Sept. 28th. The patient was then ordered to stay in bed, but he habitually disregarded this order and used the water-closet of the ward. On Oct. 2nd the result of an agglutination test was negative, but was positive when it was repeated on Oct. 9th, when X was notified as a case of typhoid fever. He was not, however, removed to the York Isolation Hospital, although such removal was provided for by an existing agreement. On Oct. 22nd two further notifications were received by Dr. Walker, one more on Oct. 23rd, and 15 on Oct. 24th. Dr. Walker then concluded that the infection was probably water-borne and that there would probably be many more cases; he thereupon communicated with the county medical officer of health.

The 43 cases notified round about Oct. 24th would probably have been infected about Oct. 3rd–5th.

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[1] Reports on Public Health and Medical Subjects. No. 69. Report on an Outbreak of Enteric Fever in the Malton Urban District. By W. V. Shaw, O.B.E., M.D. Pp. 16 (with map). 1s. 6d.

[2] Dr. R. Bruce Low's Report to the Local Government Board on an Outbreak of Enteric Fever in certain villages situated on the River Rye in North Yorkshire, and on the Water-supply of the Malton Urban Sanitary District. No. 67. 1893.

DIAGNOSTIC PITFALLS IN TEMPORO-MAXILLARY ARTHRITIS

The temporo-maxillary joint is quite superficial. But this fact did not, in a case recorded by Dr. M. Jacod in *La Presse Médicale* for Feb. 1st, save the patient from a series of diagnostic errors with a tragio-comic sequence. The story begins in a river in which a man, aged 26, found his passion for fishing stronger than the discomforts he felt on account of the cold wind. He awoke next morning, the left side of his face feeling stiff, and the pre-auricular region very painful. This pain radiated upwards and downwards to the angle of the jaw, but there was no loss of symmetry of the face, no trismus, no auditory disturbance. So he hied him to a dentist who, finding that the left lower wisdom tooth had not erupted, put the blame for all the symptoms on it. Accordingly, an incision was made over it and mouth washes were prescribed. As the pain had become worse instead of better on the fifth day, the dentist realised that the tooth ought to be extracted, and so it was. The sequel to this step was an increase of the pain. The patient now consulted an otologist who, finding nothing amiss with the left ear, apart from some pain in the external meatus, expressed the opinion that the dental extraction was to blame for the pain. On the ninth day the patient consulted his family doctor who, finding some swelling in front of and below the ear, diagnosed acute parotitis on the left side. Evidently an early case of mumps, and doubtless the disease would appear on the right side in a few days. So the patient was confined to his bedroom, and derived what comfort he could from a local dressing. By the twelfth day the "mumps" had refused to extend to the right side, and the symptoms persisted on the left side. The patient himself now noticed that the introduction of a speculum into the external auditory meatus accentuated the pain. A new examination, made presumably by Dr. Jacod himself, revealed the quite characteristic picture of benign temporo-maxillary arthritis *a frigore*. The jaw was immobilised, and counter-irritation with the galvano-cautery was prescribed, supplemented by salicylate of soda given by the mouth for several days. The pain abated in 24 hours, and the movements of the jaw were normal and painless after five days.

CANCER IN TONKIN

In a communication to the Academy of Medicine on Jan. 24th, Dr. Le Roy des Barres drew attention to certain peculiarities in the incidence of malignant disease in the tropics, particularly in Tonkin. After 30 years in a relatively well-equipped surgical hospital, he has come to the conclusion that malignant disease is quite common in Tonkin—a finding contrary to the common belief that malignant disease is rare in the tropics. In 1929 he saw 162 cases, in 1930 186, and in 1931 as many as 215 cases. While in Europe the ratio of connective tissue tumours to epitheliomas is as 1 to 18, in Tonkin it is as 1 to 7·5. In as high a proportion as 18 per cent. of all the cases the penis was the seat of the disease, and penis cases formed 31 per cent. of all cases of cancer in the male. Cancer of the uterus is set down as occurring in 9 per cent., and cancer of the breast in 8 per cent. of the cases; these figures are, however, valueless, as it is not stated whether the percentages refer to all the cases or only to the cases of cancer in women. Whereas cancer of the digestive tract accounts for more than 50 per cent. of all the cases in Europe, it accounts for only 5 per cent. of the cases observed in Tonkin. The average age-incidence for epitheliomas was only 46 years—much lower than in Europe. The average age-incidence for sarcomas was 35 years. Three-quarters of the cases of cancer affected persons between the ages of 30 and 60, and more than half of all the cases occurred between the ages of 40 and 60. A comparison with Bablet's findings, which concern Cochin China mainly, show that while 21 per cent. of the cases of cancer in Cochin China affect the mouth, only 8 per cent. of the cases in Tonkin show this localisation.

PERIODICAL MEDICAL EXAMINATIONS

The achievements of the Life Extension Institute of New York have made some impression in France. The arguments in favour of a complete periodical medical examination are, indeed, so plausible. You overhaul your car or any other piece of machinery periodically to avoid a breakdown, so why not apply the same rule to the even more valuable and delicate machinery of the human body? And if something is good for the Americans, should it not also be good for the French? In answer to these and similar questions, bodies more or less modelled on the pioneer American organisation have begun to appear in France. But the medical profession has not rallied to them with whole-hearted enthusiasm. In at least one such institution the policy seems to have been adopted of adding treatment to the programme of the exhaustive medical examination. The result has been a vigorous protest from the practitioners in the neighbourhood who have seen in this institution a not altogether fair competitor. Those who are familiar with Latin psychology are inclined to be sceptical as to the immediate future of such institutions in France.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 4TH, 1933

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 9 (last week 22); scarlet fever, 1763; diphtheria, 789; enteric fever, 19; acute pneumonia (primary or influenzal), 1362 (last three weeks 4106, 2228, 1436); puerperal fever, 56; puerperal pyrexia, 107; cerebro-spinal fever, 51; acute poliomyelitis, 12; acute polio-encephalitis, 3; encephalitis lethargica, 7; continued fever, 1 (Holywell R.D., Flintshire); dysentery, 11; ophthalmia neonatorum, 97. No case of cholera, plague, or typhus fever, was notified during the week.

The notifications of acute pneumonia (primary or influenzal) were still below the expected number by 34 per cent. in England and Wales and 27 per cent. in the County of London.

The number of cases in the Infectious Hospital of the London County Council on March 7th–8th was as follows:—Small-pox, 52 under treatment, 2 under observation (last week 56 and 1 respectively); scarlet fever, 1000; diphtheria, 1583; enteric fever, 0; measles, 208; whooping-cough, 688; puerperal fever, 31 (plus 1 baby); encephalitis lethargica, 231; poliomyelitis, 2; "other diseases," 341. At St. Margaret's Hospital there were 19 babies (plus 12 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there was no death from small-pox, 3 (2) from enteric fever, 30 (0) from measles, 7 (2) from scarlet fever, 36 (11) from whooping-cough, 28 (4) from diphtheria, 67 (11) from diarrhœa and enteritis under two years, and 242 (42) from influenza. The figures in parentheses are those for London itself.

The only great town reporting more than 10 deaths from influenza was Bradford (with 12). Preston reported a fatal case of enteric fever. Four deaths from measles occurred at Hull, at Liverpool, and at Birmingham, 3 each at Brighton and Newport. Whooping-cough accounted for 4 deaths each at West Ham and Salford, 3 at St. Helens. Liverpool reported 10 deaths from diarrhœa.

The number of stillbirths notified during the week was 312 (corresponding to a rate of 46 per 1000 total births), including 40 in London.

and money, but it fails to control, inasmuch as infected children are at large, playing in the streets without restriction, and therefore spreading infection." Sir George Newman has said on several occasions that, except for rare instances in rural districts, school closure is rightly becoming an obsolete practice. Dr. Alderton has the consensus of modern expert opinion on his side.

THE DOCTOR'S DAY

"Come, tell me how you live," I cried,
"And what it is you do!"

XIX.—WITH THE GUARDS' BRIGADE

Every young man who joins the Royal Army Medical Corps will find himself, sometime or other, in medical charge of effective troops. Given reasonably good units, there is no job, military or civil, which can be more varied and fascinating, few which provide such opportunities for studying one's fellow men, and none where good honest work can give a more stimulating return. The wise medical officer will proceed with caution until he feels himself firmly established. Then as time goes on, he finds himself becoming more and more a personality, his advice sought after and followed, and in the end he may attain a position of responsibility and influence far beyond his years and military rank. With this introductory note I proceed to describe a day spent as medical officer in charge of troops.

SICK-PARADE BEFORE BREAKFAST

In time to commence work at 7.30, I reach the medical inspection-room where the men reporting sick await me. All four units of my brigade are represented—two famous English battalions, another English battalion, well, not just so renowned, and a battalion of Highlanders a designation which tells their quality, for a second-class kilted regiment has yet to be raised. There are various ways in which the discipline and general efficiency of a unit may be gauged; the quickest is to see the sick-parade. So knowing my battalions, I know in advance that from three of them every man reporting sick will do so with good reason. In the remaining battalion, although I have put an end to attempts at malingering, men still take advantage of trifling ailments in the hope of escaping some duty—sure evidence of lack of discipline and of pride in themselves and in their regiment.

First a batch of men with temperatures have to be examined and sorted out. This needs care, for last week I had the humiliation of missing an early scarlet rash. One man, recently returned from abroad, describes an attack very suggestive of malaria. I make blood smears to accompany him to hospital, in case the pathologist cares to make use of them, keeping back one or two to stain and examine myself for practice. Next, a whitlow to open. A sprained wrist—I *think* there's no fracture, but we'd better have an X ray. "Cough and pain in the chest, sir" proves to be pleurisy with effusion—and so on for a couple of hours, a fine training in quickness and judgment, with the added interest of learning later how the provisional diagnoses finally turn out. Also, during my weekly tour of duty as orderly officer at the hospital, I make a point of seeing every patient from my brigade, medical, surgical, or otherwise, to ascertain exactly how they are progressing. The last case this morning presents no diagnostic difficulty. A Highlander with a large raw sore on his foot, obviously caused by prolonged marching with a neglected blister. He must have suffered torments. I say angrily: "This will take weeks to heal now. Why didn't you fall out on the line of march?" "Sir," replies the man, "I didn't want to give the battalion a bad name." . . . I go off to breakfast feeling privileged to have charge of men like these.

MORNING IN HOSPITAL

Breakfast over, I pay a visit to the main hospital where I have a ward of non-acute cases. One of these is rather puzzling—a man claiming to be deaf, whose auditory tests give such conflicting results that I feel sure he is shamming. I decide to arrange a consultation with the ear specialist, and, if he confirms my opinion, lay a plot to show up the schemer in some dramatic fashion. Then back again to my brigade lines to further several schemes I have in hand for increasing the marching efficiency of the troops. These have been explained to my best battalion, and eagerly adopted. If successful when tested out, as I am sure they will be, two of the others will be keen to follow suit. If the slack battalion prove obstructive, as is their custom, a word to the brigade commander will have them brought to heel. So I see my way clear to achieving the great ambition of my young life—to have the best marching brigade in the army, that is, to go through the strenuous training exercises and manœuvres with the smallest number of march casualties.

In the afternoon a few sets of tennis, then tea and another visit to hospital, this time voluntary. I am working for the M.D., and the specialist in medicine has recommended several "good cases" for overhaul and report. An excellent series, quite as varied as any group I have seen when an H.P., and including one or two diagnostic puzzles which require some study of the Fathers before committing myself. Next week I hope to spend one or two afternoons in a similar way seeing women and children at the Families' Hospital.

GOOD FELLOWSHIP

Only one duty remains for to-night. I have been bidden to a dance given by the sergeants of my Highland battalion, and I feel distinguished by this mark of their esteem. I arrive when the festivities are well advanced, and I am made to realise that I am a welcome guest and among good friends. Indeed, the proffered hospitality is overwhelming—"But, sir, you haven't had a drink with *me* yet!" Alas! the line must be drawn somewhere. My old friend the pipe-major has been less wise, and is now in a high state of exaltation. The whole art and mystery of pipe music, he explains, is behind him; there is no world left him to conquer. "Have you ever heard of *The Lost Pibroch*"? I ask. "Sir," he says, "it is my favourite tune." "But," I protest, "I have read a book which says that in the last 200 years there has been only one man who could play *The Lost Pibroch*, and he, of course, is dead." The pipe-major is no whit abashed. "Sir," he says with emphasis, "that is absolutely true—but before he died he taught it to me."

I walk home under the stars. Doubtless I shall carry out many duties in the Corps; perhaps, who knows, I may one day succeed in obtaining recognition as a specialist in some branch; but whatever happens, I know that I can never have a happier time than my 18 months with the Guards' Brigade.

Amalgamation of Birmingham Hospitals.—It was announced at the annual meeting of Birmingham General Hospital that arrangements for its amalgamation with the Queen's Hospital have now been practically completed, and that when the new hospital centre comes into being it will be financed, controlled, and developed by the amalgamated boards. The General Hospital is governed by trustees, but the Queen's is incorporated by Act of Parliament, and parliamentary sanction to the union will therefore be required.

If X was a cause of the outbreak he must have been a source of infection from the time of his admission on Sept. 23rd. Tests of the drain from the male sick block to a manhole outside the institution showed a considerable leakage, and excavations showed a broken socket in the glazed earthenware pipe at a point where excavation had been made some 18 months previously to lay an electric power cable. Below the break was a large empty cavity into which the water used for testing had flowed and disappeared. Excavations between the Ladywell spring and the broken drain showed by bacteriological examination that the rock was sewage-polluted, and the junction of the clay and the oölite at this point probably determined the seepage of sewage directly into the Ladywell. The distance from the break in the drain to the Ladywell was about 250 yards; this probably accounts for the interval which elapsed between the date of admission of X and the date of the "explosion" of water-borne infections. X was removed from the institution on Oct. 26th and the notification of primary cases ceased about three weeks later; chlorination of the water-supply, begun on the same date, might, however, have had the same result.

The remainder of the report deals with the measures taken to arrange accommodation for the patients in neighbouring hospitals and with the results of inoculation. 1600 persons were inoculated, and no case occurred in individuals inoculated before infection. In persons inoculated during the incubation period there was some evidence that the attack ran a milder course.

SUMMARY AND CONCLUSIONS

The summary and conclusions of Dr. Shaw's report are given below in extenso:—

(1) A total of 235 persons, or approximately 5 per cent. of the population of Malton, contracted enteric fever in the six weeks ended mid-November, 1932. There were 35 secondary cases.

(2) There was no case of enteric fever in the urban district until Sept. 23rd, 1932, when a patient was admitted to the public assistance institution. On Sept. 26th he was found to be suffering from enteric fever, but he was not notified until Oct. 9th, nor was he removed to the York Isolation Hospital until Oct. 26th, although an agreement was in existence between Malton urban district council and the Corporation of York for the admission of cases of infectious disease.

(3) This man's infected excreta were drained into the river Derwent—the common sewer of the town—by a broken drain allowing part of the contents to soak into the surrounding soil, polluting it heavily with the specific infection which gained access to the water-supply, either by drainage from the oölite or otherwise.

(4) The infected sewage probably entered the public water-supply from about Sept. 30th to Oct. 26th, when the patient was removed to the York Isolation Hospital.

(5) The town is sewered into the river Derwent and, apart altogether from the public assistance institution, infected excreta from the water-borne cases of enteric fever had been entering the river Derwent for upwards of a month.

(6) The exceptional incidence of enteric fever in Malton during the seventies, eighties, and nineties of last century, recorded by the late Dr. Bruce Low in his report of May 5th, 1893, has unfortunately been repeated in the year 1932, and although the source of pollution differed the vehicle was the same. I cannot do better than repeat the conclusion of Dr. Bruce Low that "the members of the Malton urban sanitary authority should, therefore, without delay, reconsider the question of obtaining for the town a sufficient and uniformly wholesome water-supply."

School Closure at Barnoldswick

In an address reported on another page Dr. Brincker says that school closure as a method of checking the spread of infection has been discarded in schools where an intelligent method of inspection, surveillance, and control has been instituted. Almost while he was speaking a Yorkshire medical officer of health was defending himself against severe criticism of his action in not closing the local schools during the recent epidemic of influenza. Barnoldswick is an urban district of 11,675 inhabitants in the West Riding, not far from Haworth, whose sometime rector was pilloried by his daughters for his dour expression of opinion; and the Brontë tradition has survived among the members of the district council, but without personal animus, for one member concluded his remarks with the words "We know that Dr. Alderton has been a good servant to us and we wish him well," when the doctor responded, "Every public man must submit to criticism." Another member added that it was not the person of their medical officer but the general attitude of the medical profession towards schools that he was attacking, and he reiterated his belief that "when children are compelled to be herded together they are in more danger of infection than when they are scattered." That this view should still have strong adherents among the public is not surprising, since it is not so long ago that a section of the medical profession thought there was something to be said for it. In former days when there was no close medical supervision of schools the position was quite other than what it is to-day, when the expert services of doctors and nurses are available, and the teachers have acquired skill in observing the earliest signs of ill-health and know which children to watch and refer to the school medical officer or (if he is not immediately available) to private doctors. Without this organisation and unceasing vigilance it would be a very different matter, and it is not surprising that Dr. Alderton was overburdened with the work of keeping fully in touch with the epidemic. Under these circumstances who would not have resented the suggestion that "he had given the matter insufficient attention"? To have closed the school would have been, in the words of a standard text-book, "a confession of failure, a throwing up of the sponge in the contest with disease. The following up of cases, especially of non-notifiable diseases, is lost." There is also the fact that with the improved hygienic conditions of the schools and the present poverty and overcrowding of the homes it is, as Dr. Alderton said, far better for the children to be under cover and in the warmth at school than running the streets. As far back as 1910 Dr. Kerr wrote: "In proportion as the school under present conditions recedes as a factor in disseminating disease, so from the public health point of view do other factors gain in importance. In future the sanitarian must not be hypnotised into regarding the school as a chief centre of disease, but must turn his attention to possibilities of preventing infection in families and houses, courts, and streets." In 1919 a committee of the American Medical Association and the U.S.A. Bureau of Education reported that "the closure of schools is an extremely clumsy, unscientific, and unsatisfactory method of controlling epidemics among school-children. It results not only in loss of school time

CORRESPONDENCE

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I am, Sir, yours faithfully,

London, March 13th, 1933. S. P. JAMES.

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When the evening dose has to be definitely higher, say 6 units, than the morning one, I suspect that the patient has some other infection which is associated with a slight rise of temperature at night. It may be possible to discover some source of minor sepsis, but if none can be found the possibility of a tuberculous lesion must be considered. The physical signs of this are often difficult to discover in these mild cases, especially if the mediastinal glands are involved. In some cases I have watched the evening dose gradually decrease without the appearance of any signs of a tuberculous lesion. It is possible that Dr. Raven's patient has some other infection responsible for the great increase of insulin demands during the night.—I am, Sir, yours faithfully,

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PANEL AND CONTRACT PRACTICE

The Fund

THE central practitioners' fund for 1932, after 10 per cent. deduction, is £6,055,323. The corresponding sum for 1931 was £6,467,625. The provisional estimate for 1933 is £5,868,000.

What are the Terms of Service?

Any registered medical practitioner can join the panel by writing to the clerk of the insurance committee for his area, and provided that his name has not already been removed from the panel by the Minister of Health after official inquiry the clerk must put his name down on the local list of practitioners for panel service. This is the position in general terms. But on looking a little deeper the matter is not so simple as that, for the practitioner has to sign a form in which he says (among other things) that he desires "to undertake the medical attendance and treatment of insured persons in the area of the committee *upon the terms for the time being in operation in that area*, and for this purpose I hereby accept service *under those terms.*" What are these terms of service? Are they the same for all areas—i.e., the general terms of service as agreed between the Ministry and the Insurance Acts Committee? Presumably not, because the words "in that area" are in the practitioner's agreement. How then is the applicant to know the local difference between his terms and those of other areas or the general terms of service? He will probably be supplied, after he has signed his agreement, with the local allocation scheme which deals with the problem of insured persons not on any list, of treatment in emergency, of refusal to accept insured persons for treatment, or of the method of getting an insured person removed from a list. He will also be supplied, after he has signed his agreement, with the local distribution scheme which will explain how he is paid, the methods of calculating lists, the payment for temporary residents, emergency treatment, mileage, and so forth. Both these schemes will have been approved by the Ministry of Health after agreement between the panel committee and the insurance committee, but difficulties may apparently be raised by the insurance committee about other matters such as hours, place, and other occupation, of which the practitioner knows nothing before signing. From the regulations it would appear that the insurance committee can hold up his admission to the panel until they get their way on such matters.

Let us take a supposed case. Can the insurance committee force a doctor, applying to go on the panel, to increase the number of his surgery hours, or to have a consultation time on Sundays? Can the insurance committee refuse permission to go on the panel to a doctor who is also carrying on business as a chemist, or who wishes to continue in practice as a dentist at the same time? Is there any statutory difference between going on the panel and being admitted to the list? How soon after applying to go on the panel can the doctor accept patients by signing medical cards? Can the insurance committee refuse permission to join the panel until these questions of hours, places of occupation, or other occupations have been settled? In the event of a qualified doctor being refused permission to go on the panel owing to "unsatisfactory hours" would he have the right of legal action against the committee?

The answer to these questions is by no means clear. In certain areas precedents have been created by the refusal of the insurance committee to allow a doctor to have his surgery in a building which was regarded as unsuitable—e.g., a farm building; and recently when a dentist, being also a qualified doctor, applied to go on the panel the application was adjourned for consideration until the next meeting, in order that his hours and place of work might be investigated. Some members of the committee seem to have thought that as he was a dentist he could not also be an insurance doctor. These happenings are contrary to the common view that any qualified man (not being an excepted case) may join the panel by simply writing to say he wishes to do so. It would be interesting to hear from insurance practitioners who have met with other restricting or overriding decisions from their insurance committees.

Count of Register

The movement of the panel population continues to show a slight tendency towards the country from industrial areas. The count of the register for the following areas is going up:—

Brighton.
Blackpool.
Southend-on-Sea.
Southport.
Croydon.
Oxford.
Worcester.
Portsmouth.
Essex.
Kent.
Bude.
Cambridge.
Middlesex.
Somerset.
Surrey.
Sussex.
Devon.

The count is tending downwards in the following areas:—

Barrow.
Birkenhead.
Bristol.
West Hartlepool.
Bolton.
Bootle.
Burnley.
Halifax.
Huddersfield.
Middlesbrough.
Oldham.
Bradford.
Preston.
Durham.
Lancashire.
London.
Yorkshire, W.

Own Arrangers

Croydon still maintains the lead in giving permission to insured persons to make their own arrangements with other doctors: 84 permissions per 10,000 insured persons as against 85 last year. The county committees keep to the same average this year as last—viz., 7 per 10,000—whilst the county boroughs have increased to 17·9 per 10,000 against 14 last year. These applicants deserve some sympathy. Some of them are homœopathic patients who cannot find an insurance doctor who shares their view; sometimes they have been under the care of a non-panel doctor for a long time before they became insured persons. There seems to be some hostility towards "own arrangers" on the part of insurance committees, dating perhaps from a distant time when non-panel doctors advised their insured patients to remain under their care by contracting out of the Act. There are still many committees in England which do not allow any such claims to go through, and we think the time has come for more sympathetic attention to be paid to them.

GENERAL LYING-IN HOSPITAL.—Last week the Queen opened the new out-patient department, welfare centre, and nurses' home of the General Lying-in Hospital, York-road, Lambeth. Her Majesty succeeded as patron Queen Alexandra, whose predecessors were Queen Victoria and Queen Adelaide. The nurses' home on the upper floors of the same building contains 74 bedrooms and bed-sitting rooms; on the lower floors are a lecture hall and a museum. The cost has been £57,000, of which £1500 only remains to be raised.

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Again, Dr. Savage says I infer that "all children get a considerable milk ration during the first three or four years of life.” That is an exaggeration, as I say “practically all”—and from extended inquiries among medical officers and others having knowledge of children in Surrey, Essex, and London, and my own observations, that statement is true; and if it is not true of Somerset then, in view of the present regulations concerning milk distribution to children, it seems to be rather a reflection on those in charge of such matters in that county.

Nor do I infer that the milk practically all children have is “sterilised by boiling or pasteurisation.” (Surely it is common knowledge that pasteurisation does not sterilise milk.) What I do say is that it is “almost universally sterilised by boiling or pasteurised.” The “incorrect generalisation” to which Dr. Savage refers, is drawn from his misreading of what I wrote.

Apparently Dr. Savage’s views on the effects of pasteurisation are by no means in accord with those of the research workers if they consist only of the meagre items on p. 487. He states, regarding vitamin C in milk, that all experts regard it “as an inadequate source of supply,” but Providence evidently did not agree with these experts, as milk was provided as the sole infant nutriment of the whole mammalian creation, which still seems to be carrying on very well.

Dr. Savage’s conclusion that my paper “offers no evidence either way as regards the relative value of raw or pasteurised milk in preventing caries” seems to me to be based on false and imaginary premises. Indeed, if he realised what an amazing experience it was to see 70 children consecutively (or 95 if I count those under 2 years old) of whom 63 (or 88) were absolutely free from caries in spite of their diet, and the remainder had caries only in teeth erupted before admission (except two who had the milk ration, but there were grave doubts if they had had it raw), and mostly physically subnormal at that, he might see fit to change his views.

I am, Sir, yours faithfully,

EVELYN SPRAWSON.

The London Hospital Dental School, Turner-street, E.,
March 8th, 1933.

FILARIAL PERIODICITY

To the Editor of THE LANCET

SIR,—The observations by Dr. Carmichael Low, Dr. Manson-Bahr, and Mr. Walters, published in your issue of March 4th (p. 466), together with animal experiments by Dr. Hanschell, raise again the interesting question of the mechanism of filarial periodicity. It has been the source of much speculation and its investigation the subject of much work, but so far there has been no record published of the behaviour or survival of microfilaria bancrofti artificially inoculated into man, an experiment which Dr. Manson-Bahr himself suggested some years ago (THE LANCET, 1929, ii., 45).

Recently I transfused a human volunteer intravenously with citrated blood containing 720,000 embryos, obtained from a case showing nocturnal periodicity. The ear blood of the recipient was then examined at the end of the transfusion, at 3, 6, 12, and 21 hours later, and also at frequent intervals for several subsequent days; but no embryos were found. It must be admitted, however, that between the drawing-off of the blood for transfusion and its injection there was an unavoidable delay of two hours, during which the embryos showed signs of commencing ecdysis. Whether this had any influence on the result of the experiment it is impossible to say, but it makes it desirable that the experiment of transfusing man with blood containing a sufficient number of living microfilariæ be repeated under more favourable conditions, especially as the only vertebrate host of *W. bancrofti* appears to be man himself.—I am, Sir, yours faithfully,

FREDERICK MURGATROYD.

Liverpool, March 6th, 1933.

“EXCITABILITY: A CARDIAC STUDY”

To the Editor of THE LANCET

SIR,—It is so difficult for anyone to collect and collate a series of new facts, running counter to current theory, without first meeting considerable opposition that I am greatly indebted to your reviewer of my book,[1] for his acknowledgment that the experiments eliciting the facts have been carefully carried out. I wish, however, to point out that readers themselves must take over some part of the difficulty of its understanding. It took me several months to convert the late Prof. Waller to the view that excitability was not a primary property of excitable tissue, but that there were instead behind this two deeper properties, the kinesiphores. He informed me of his difficulties after his conversion. He had first taken the facts given in my tracings and attempted to fit them in with the idea that excitability was a tissue-property which could be either raised or lowered. The result of these efforts was an attack of mental indigestion obtained through trying to visualise something being both raised and lowered at once. He next tried a diphasic idea by which the property was to be first raised and then lowered, or vice versa, but that was no better because at the end of the two processes the property had still to be imagined as both up and down. Eventually he recast his original theories on these matters, a process which, as he pointed out to me, grows more difficult as we grow older.

Every reader of my book who attempts to fit the facts in with current theory—i.e., with current understanding—will necessarily find that I have made matters more difficult than ever to understand. The difficulties, however, are not created by the facts, but by attempting to fit them into theories for which they are not adapted. I should like to be given the opportunity of denying the paternity, now seemingly attributed to me, of the “frothy” theory of psycho-physical parallelism, a theory which so many physiologists and psychologists have found quite credible. I merely pointed out that the views concerning muscular functioning which the facts lead me to form would lead also, if they were regarded as of general applicability, to a theory having many resemblances to that of psycho-physical parallelism. This idea, unfortunately, is inconsistent with the theory that the psychologists have been following the muddier path; they seem instead to have marched on the firmer ground. I thought also, when noting these points, that there might be quite a large number of medical men who would be interested in what now seems quite possible—namely, that the organ of mind may include a structure which does not necessarily belong to the order of things we call material.

It seems to me further possible that it would have been better if I had omitted my remarks about Freud—even though I only attempted to give him some of his due—because so many people believe that he is a charlatan whose theories have no scientific basis whatever. To anyone who has committed himself to such a view, it can certainly be most annoying to meet new facts not only capable of being interpreted as the evidence that Freud's theories have a very solid basis of fact. but also as indicating that he is so far ahead of the physiology of his time that he and the physiologist have lost sight of one another.

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[1] See THE I

Yet, after all. Sir, my incursions into psychology form possibly about one-fiftieth part of the whole. How much psychology then does one require to know to be able to understand how it can be that what should be a calm judicial review of the facts actually leaves the facts severely alone. and considers chiefly instead the believed muddier ways of the psychologists? I am, Sir, yours faithfully,

W. BURRIDGE.

Department of Physiology, King George's Medical College, Lucknow, March 3rd, 1933.

CHILDREN IN THE CURRICULUM

To the Editor of THE LANCET

SIR,—Your weighty leading article (p. 477) on the discussion by the General Medical Council on this subject has been read by me with great interest and, if I may say so, with approval. I see, however, that you have credited the inspectors, of whom I had the honour to be one, with a definite request for "a separate written paper, and a special clinical examination, to be conducted by those engaged in the teaching of pædiatrics." No such request was made by me. In my general report on the final examinations in medicine and in dealing with the subjects of mental diseases and the diseases of children I wrote as follows:—

> "Without expressing any definite opinion as to whether the better plan is to carry out some kind of separation of the two subjects on the lines which have been adopted in some of the centres or not, I feel that in those centres where this does not prevail a healthy tradition should be established that should lead candidates to feel that there is a strong probability that questions may be set in the Written and asked in the Clinical or Oral, or in both."

I am, Sir, yours faithfully,

Leeds, March 13th, 1933. T. WARDROP GRIFFITH.

CONTROL OF INFECTIONS IN CHILDREN'S WARDS

To the Editor of THE LANCET

SIR,—The letter from Dr. Nabarro and Dr. Signy in your last issue prompts me to endorse all they say in regard to the dangers of certain of the simple common infections becoming epidemic in the wards of hospitals and institutions devoted to children. The particular bugbear of the rheumatic child is an acute nasopharyngeal infection. and the danger of this spreading from patient to patient in special hospitals and convalescent homes for children with rheumatic heart disease may become considerable. I have had bitter experience of this but, being firmly convinced of the value of these homes. sought for some means, short of closing down during certain of the winter months, to limit the spread of the apparently inevitable "sore-throat." By putting the beds alternately head to foot, in wards where the number of patients prohibits the spacing of beds beyond the regulation 3 ft., the distance of neighbouring mouths and their attendant droplet infections is increased to nearly double. The expedient appears to have been successful. and throat infections, which in the past would almost certainly have led to minor epidemics, have this year remained sporadic.

I claim no originality in the idea. but made a mental note of the method when listening to a discussion on dormitory infection, which took place last year at the Royal Society of Medicine.

I am, Sir, yours faithfully,

BERNARD SCHLESINGER.

Portland-place, W., March 14th, 1933.

EXPERIMENTAL SHOCK

To the Editor of THE LANCET

SIR,—In your recent annotation of my Arris and Gale lecture on experimental shock, I observe that you state (p. 480) that I consider that primary shock was due to an exhaustion of the vasomotor centre. The use of the term "exhaustion" was a little unfortunate, for I attempted to make it as clear as possible, and gave the evidence, that the centre is not exhausted, although its activity may have been diminished as a result of carbon dioxide or of the receipt of inhibitory impulses. I consider this is rather an important practical point, as it suggests the possibility that during primary shock the activity of the centre may be regained by adequate therapeutic measures.—I am, Sir, yours faithfully,

R. J. S. MCDOWALL.

King's College, Strand, W.C., March 10th, 1933.

INTERNATIONAL CONGRESS OF MILITARY MEDICINE. The seventh International Congress of Military Medicine and Pharmacy will be held in Madrid from May 29th to June 4th. The subjects of discussion include: the general principles affecting the military organisation of a nation in case of war; preventive inoculation in the forces: the treatment of urgent cases under fire; the use of preserved foods as rations; and a comparative study of the different dental and administrative military services. The last day of the congress will be occupied with field demonstrations and a visit to various military hospitals. Members of the congress will also have an opportunity of attending the International Congress of Medical Air Services which is being held in Madrid from June 1st to June 4th. and the third session of the International Office of Military Medical Documentation at Seville. to which a special train is being run. The special train will also visit Granada and Melilla, and an excursion to Morocco is being organised after the congress (June 10th–15th), which members may join. Application should be made before April 1st to the secretary of the congress, Ministero de la Marina, Madrid.

WORK OF CHILDREN'S HOSPITALS.—The jubilee report of the Royal Hospital for Sick Children, Glasgow. emphasises the necessity for a research endowment fund and an orthopædic department. It is pointed out that the latter would form the centre of an organisation for Glasgow, the thickly populated neighbouring districts, and the centre and west of Scotland. Last year there were 5819 in-patients, and more than 25,000 attendances of out-patients. Of the in-patients over 4000 were surgical cases. The country branch in Dumbartonshire treated 993 patients, almost equally divided between medical and surgical cases.—Last year Birmingham Children's Hospital received 3309 in-patients. a substantial increase; new surgical out-patients slightly exceeded 10,000, also a considerable increase. The average stay was 22·5 days, against 25 days. The annual report refers to "the new and important chapter in the hospital's history due to the beneficent action of the president. Mr. C. Kunzle, in placing his château at Davos-Dorf at the disposal of the hospital for the treatment of weakly children, particularly those predisposed to tuberculosis. Fifty-three children were sent up to the end of the year. and the medical staff have been immensely impressed with the results and possibilities of the scheme, which is of great promise" (see THE LANCET, March 11th, p. 538). Mr. Kunzle and his son have arranged for a guarantee fund to ensure the continuance of the work.—At 428 the number of patients admitted to Moseley Hall (Birmingham) Convalescent Hospital for Children last year was an increase of nearly 25 per cent. In his medical report Dr. A. V. Neale says that Moseley Hall's "especial value in the control of rheumatic disease is outstanding."—Pressure upon the new Belfast Hospital for Sick Children is already so great that it was stated at the annual meeting last week that acute surgical cases have to be turned away daily. while it is becoming increasingly difficult to obtain beds for the chronic cases met with in the out-patients' department. There are 63 beds and ten cots, and last year there were 951 admissions and over 16,000 new out-patients. A scholarship is now available every second year for research into children's diseases.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Shortage of Medical Officers in the Army

IN Committee of the House of Commons on the Army Estimates for 1933,

Sir **FRANCIS FREMANTLE** said he wished to raise once more a matter of considerable importance—namely, the number of officers in the medical service. The number of medical officers in the Army was always very much below establishment, and he had raised this question regularly every year for the last 14 years without getting any satisfaction. Whatever their views might be in regard to war and peace, it was most essential to keep the medical service intact and efficient. The medical service had been working on a deficiency in establishment strength for years, and the position was just as serious as ever this year. The total establishment of medical officers required for the Army on the home establishment was 826, and the actual number on the strength was 669; a deficiency of 154 medical officers, or 35 per cent. That was not made up by temporary commissioned officers who were employed, 48, and by retired officers employed, 54.

The position was more serious than the actual numbers suggested. The work was only kept up by having two-thirds of the officers serving abroad. The percentage of majors, captains, and lieutenants at home was 42, and abroad 58, and the period at home was only about two years. As soon as they came back from service abroad they had only two years at home before having to go abroad again. That was partly the reason why the Government could not get officers into the Army Medical Service. Medical officers knew that when they married they would have to spend a great part of their time abroad, because the War Office was able to fill up the positions at home by temporary commissioned officers, while they could not get temporary commissioned officers to go abroad. That became worse and worse every year. The Army Medical Service was becoming more and more a service of old men. That position was definitely recognised in 1931. At that time a memorandum on the health of the Army stated:—

> "The number of new officer entrants in the Royal Army Medical Corps and its supplementary reserve, which has been most unsatisfactory since the Great War, has fallen still lower during the past year, and the deficiency of regular officers is causing grave concern."

When the matter was discussed in the House of Commons the Financial Secretary to the War Office said that all were agreed that this was a very serious matter. It was admitted that the deficiency in medical officers affected not only the War Office, but also the Admiralty and the Air Force, and two years ago it was stated that an inter-Departmental Committee for the three services was being set up for the purpose of finding some solution for the problem. That Committee had been sitting under Sir Warren Fisher, and now they heard that the Committee was proceeding to consider its report. Evidently no solution of the problem had been found or the report was being delayed, because the Committee could not face the solution that was necessary. He (Sir F. Fremantle) had made several suggestions and so had the British Medical Association. He wanted a statement from the Financial Secretary to the War Office, not simply that he was waiting for the Committee's report, the contents of which he probably knew, but that he would put it to the Government and to the Chancellor of the Exchequer that the health services were essential to the Army and that they could not face the possibility of another war with depleted medical services.

Mr. **DUFF COOPER** (Financial Secretary to the War Office) said the question raised by Sir F. Fremantle was a very serious one and had been under consideration for a long time. The Committee to which the hon. Member had referred was much impressed by the evidence that he had given. He (Mr. Duff Cooper) confessed that the work of the Committee might have slackened about a year ago, when owing to financial conditions there seemed to be very little prospect of obtaining funds for anything, even for so good a cause as this, and it was considered that there was no way of obtaining these recruits except by increased expenditure. He knew that Sir F. Fremantle had his own suggestions; he had studied those suggestions, and he thought that if they could be brought into force, which would mean a good deal of collaboration with local authorities, they might overcome the difficulty. The inter-Departmental Committee on the question, which was never dissolved, but which suspended its activities for a short space of time, partly owing to the financial state of the country, and partly owing to the many responsibilities then resting on Sir Warren Fisher, had now resumed its sittings and was actively pursuing its inquiries with a view to finding a solution to the problem. He could assure Sir F. Fremantle that the matter of the Army Medical Services was really now under close consideration, and that it was hoped that some solution would be arrived at in the very near future.

The War Office were fully alive to the importance of the health of the troops, which was a matter of deep concern at the present moment. With regard to cerebro-spinal meningitis, the figures this year, although still giving cause for great anxiety, were falling off. The number of cases for the past year were 67, out of which 26 proved fatal. That was a remarkably low figure for fatal cases. The authorities were doing all they could to keep in touch with the latest developments of science both in this country and in foreign countries with regard to this disease, and everything they could do in the endeavour to lessen it they would do.

The Air Estimates

On Tuesday, March 14th, Sir **PHILIP SASSOON** (Under Secretary for Air), in introducing the Air Estimates for 1933 in the House of Commons, said that a comprehensive review was proceeding of the whole personnel of the Service. Referring to the work of the Royal Air Force, he said that, for example, settlers in the backblocks of Canada and Australia had had their daily existence immensely eased and improved and the amenities of civilisation brought to their very doors. Countless lives of men, women, and children had been saved by the provision of medical and surgical aid where otherwise accident or illness would have entailed fatal consequences. Reports of the oversea commands of the flying carried out in the last 12 months included accounts of the conveyance of surgical aid to sheiks in the deserts of Iraq and on the shores of the Persian Gulf; the carriage to remote villages of anticholera and antityphoid vaccines; and the supply of food to famine-stricken tribes in Transjordan.

In the course of the debate which followed, hon. Members strongly urged the Government to strengthen the air defences of the country and not to favour a policy of the international control of aviation which it was stated might hamper development in this country.

Mr. **WHITESIDE** said that the danger in the next war would come not from explosives, but from germs and gases. It might be, he said, that war would not even be declared, but that one nation wanting to destroy another nation would infect rats with anthrax and plague, and send them to the country it was desired to destroy. They might send through the post a parcel containing germs so potent that a whole nation might be wiped out. No Peace Pact in the world could prevent that.

Pharmacy and Poisons Bill

On Tuesday, March 14th, the House of Lords considered in Committee the Pharmacy and Poisons Bill. The Earl of ONSLOW, Chairman of Committees, was in the chair.

On Clause 23 (Power of the Secretary of State to make rules),

The Earl of LUCAN, Captain Gentlemen-at-Arms, moved an amendment providing that the Secretary of State might issue to the Poisons Board a direction that the power of the Board to make recommendations as to the making of rules with respect to certain matters specified in the Clause should not be exercised except after consultation with such body of persons as was specified in the direction, being a body which was, in his opinion, representative of persons engaged in the manufacture of poisons, or preparations containing poisons, and the Board should comply with any such direction. The Secretary of State might from time to time revoke or vary any such direction without prejudice to the issue of a new direction.

The amendment was agreed to.

The Bill passed through Committee and was reported to the House.

HOUSE OF COMMONS

THURSDAY, MARCH 9TH

Protection against Floods

Mr. HALL-CAINE asked the Minister of Agriculture whether the floods of the last few weeks had disclosed any remedial work which could be undertaken as a matter of emergency in order to provide employment and to protect the public against loss through inundations in future.—Major ELLIOT replied: I do not think that the recent floods have disclosed any further developments in the general situation with regard to the need for the execution of drainage works. I would remind my hon. friend that the responsibility for carrying out remedial works as suggested is upon local drainage authorities and is, of course, governed by financial and economic conditions. I may add that catchment boards set up under the Land Drainage Act, 1930, following a conference among themselves on Feb. 10th last, have expressed their desire to submit their views to the Government, and it is hoped to fix an early meeting with them for this purpose.

Cost of Public Assistance

Mr. JOHN MORRIS asked the Minister of Health the total public assistance expenditure of all local authorities in England and Wales, including all expenditure on transferred poor-law services, for the last available year.—Sir E. HILTON YOUNG replied: The total expenditure under the Poor-law Acts in the year ending March 31st, 1931, was £38,561,000 on revenue account and £798,000 on capital account.

National Health Insurance Medical Benefit

Mr. LECKIE asked the Minister of Health whether he was aware that many insured persons, probably between 60,000 and 100,000, would cease to be entitled to medical benefit at the end of this year as a result of the passing of the last National Health Insurance Act; and what steps he proposed to take to ensure that these people should receive medical attention when ill.—Sir E. HILTON YOUNG replied: A prolonged extension of insurance was granted under the National Health Insurance Acts to persons who have ceased to be employed and to pay contributions. After the further extension of title to medical benefit during 1933 given under the Act of last year, a number of persons will cease to be entitled to medical benefit on Dec. 31st next. Within the financial resources of the health insurance scheme no further extension of insurance rights is permissible. These persons will, after the end of the present year, be in the same position with regard to medical attention during sickness as all other persons who are not within the scope of National Health Insurance.

Enamel Ware and Antimony Poisoning

Mr. HUTCHISON asked the Minister of Health whether, in view of the cases of antimony poisoning reported from the use of cheap enamel ware in this country, he would lay down a standard of safe manufacture to which all leading British manufacturers should be compelled to conform; and whether he would at the same time prohibit the importation of all foreign enamelled ware which did not fulfil the requirements above mentioned.—Sir E. HILTON YOUNG replied: I have no power to lay down a standard such as is suggested. I am sending my hon. friend a copy of a circular which I have recently issued on the subject.

Children and Road Accidents

Mr. HANNON asked the Parliamentary Secretary to the Board of Education if his attention had been called to the action of the chief constable at Stoke-on-Trent who provided a policewoman lecturer to address children in elementary schools on traffic dangers and how to avoid them; if the result of this educational experiment had been to reduce the number of accidents to school-children; and if education committees generally would be encouraged to provide facilities for instruction of the same kind.—Mr. HERWALD RAMSBOTHAM replied: My noble friend the President of the Board is aware of the arrangements in question. He understands that the authority are satisfied that the talks have been effective, and that there are grounds for thinking that they have resulted in some reduction in the number of street accidents to children of school age. As regards the last part of the question, memoranda on traffic dangers have been issued by the Board to local education authorities from time to time, and my noble friend has every reason to believe that authorities are alive to the importance of warning children in their schools, either by notice or by the provision of special instruction, on the subject of traffic dangers generally.

Narcotic Drugs Convention

Mr. MANDER asked the Home Secretary when the Government proposed to ratify the Convention for Limiting the Manufacture and Regulating the Distribution of Narcotic Drugs, 1931.—Sir JOHN GILMOUR replied: It is the intention of H.M. Government to ratify the Convention before the date contemplated in the Convention—namely, April 13th, 1933.

MONDAY, MARCH 13TH

Panel Practitioners and Treatment of War Pensioners

Mr. HICKS asked the Minister of Pensions the number of men suffering from war disabilities who had been referred to their panel doctor for treatment; and what was the attitude of his department to the representations made by the British Medical Association protesting against the practice of referring men suffering from disabilities other than wounds to their panel doctors for treatment.—Major TRYON replied: I have no record of the number of men for whom no special treatment by the Ministry, or treatment other than such as their own medical attendant can give them, is found to be necessary. No representations have been received from the British Medical Association on this matter in regard to which there has been no change of policy.

Ministry of Pensions Hospitals

Mr. MCENTEE asked the Minister of Pensions what hospitals were now maintained by the Ministry of Pensions and where they were situated; and whether any hospitals maintained by the Ministry had been closed since Jan. 1st, 1932.—Major TRYON replied: The following hospitals are now maintained entirely by the Ministry of Pensions: Edenhall, at Musselburgh; Dunston Hill, at Newcastle; Chapel Allerton, at Leeds; Mossley Hill, at Liverpool; Maghull, at Liverpool; Cosham, at Portsmouth; Orpington, at Orpington, Kent; Latchmere, at Kingston, Surrey; Leopardstown Park, at Dublin; Rookwood, at Cardiff; and Chepstow Hospital, at Monmouth.

One hospital, Highbury, Birmingham, was closed on Jan. 9th, 1932, and Maghull Hospital, Liverpool, will be given up by the Ministry on March 31st, when the Chepstow Hospital, now undergoing alterations, will be reopened for the reception of patients of the class formerly dealt with at Maghull. In addition to the hospitals above enumerated there are 19 hospitals not under the control of the Ministry in which either the entire accommodation or some part of it is reserved for Ministry patients who are maintained by a capitation rate at the cost of the Ministry.

Prevention of Distemper in Dogs

Mr. HERBERT WILLIAMS asked the Lord President of the Council what steps were being taken to give publicity to the successful inoculation treatment for the prevention of distemper in dogs which had been discovered as the result of the investigations of the Medical Research Council.—Mr. BALDWIN replied: A statement signed by the Duke of Portland and other members of the "Field Distemper Council," which supported the researches, has been very widely published in the press, and I am advised that full accounts of the work and its results have been communicated to the veterinary profession through the medium of the technical journals. The preparations used are now available commercially and are advertised.

Mr. HERBERT WILLIAMS asked if this research work would have been impossible if the Protection of Dogs Bill had been passed into law.

Mr. BALDWIN said he believed it would have been quite impossible.

MEDICAL NEWS

University of Cambridge

On March 11th the following degrees were conferred :—

M.D.—N. M. Goodman and R. Pearce.
M.Chir.—R. Marnham and T. K. S. Lyle.
M.B. and B.Chir.—L. C. Cook.
M.B.—W. H. G. Jessop and M. A. Rushton.
B.Chir.—S. E. Birdsall.

Royal College of Surgeons of England

A meeting of the council was held on March 9th, with Sir Holburt Waring, the president, in the chair. Mr. Cecil P. G. Wakeley, surgeon to King's College Hospital, was elected a member of the court of examiners in the vacancy occasioned by the death of Mr. H. S. Clogg. Prof. Ernest W. Hey Groves was elected a member of the court of the University of Bristol in place of the late Sir Percy Sargent.

Membership of the College was granted to G. P. Goodwin (Camb. & St. Mary's) and E. R. James (Bengal & St. Mary's).

Licences in dental surgery were granted to the following :—

Arnold Barkin, F. J. Bloor, H. A. M. Ching, L. F. Ferguson, A. C. Fuller, F. C. Hampson, W. L. Haworth, J. R. C. Hindle, Margaret D. Hooper, O. E. Howell, J. F. Hunt, Owen Jacob, Harold Kanaar, G. D. Lloyd, U. S. Malik, L. E. Marshall, L. A. Mills, P. K. Robinson, W. F. Rose, W. G. Scoble, B. St. J. Steadman, H. R. Stubbs, R. B. Sumerling, A. W. Turner, W. C. F. Whaley, Millicent Williams.

Diplomas in ophthalmic medicine and surgery were granted jointly with the Royal College of Physicians to the following :—

A. J. Boase, A. J. Cameron, J. L. Connacher, K. G. Das, L. P. J. Evans, F. S. Flynn, G. S. Forrester, N. C. Ghosh, A. L. Kiow, Lu Djung-Lin, C. A. Pittar, V. B. Purvis, S. V. Rao, O. L. F. Senaratne, S. P. Srivastava.

It was decided to hold a reception for the Société Internationale d'Urologie on July 11th, and for the congress of the International Society of Orthopædic Surgery on July 20th.

University of London

At a meeting of the university court on March 8th it was announced that the Armourers and Braisers' Company and the Carpenters' Company had decided to make grants to the university of £2000 and £1000 respectively in the shape of annual payments extending over ten years; and that the Ironmongers' Company had granted £500 and the Dyers' Company £105. These benefactions will be applied towards meeting the cost of the new ceremonial hall to be erected on the university's site in Bloomsbury. An expression of the court's appreciation and cordial thanks has been conveyed to the companies.

A bequest to the university by the late Mr. Arthur L. Leon has been accepted with great appreciation. The bequest, amounting to some £20,000, is for the promotion and encouragement of post-graduate or advanced research work.

Prof. Geoffrey Hadfield has been appointed a staff examiner in pathology.

Funds for research.—Grants are made annually from the Dixon fund for the purpose of assisting scientific investigations, and the Thomas Smythe Hughes and Beaverbrook medical research funds for original medical research. Application for grants in 1933 should be made not earlier than April 1st and not later than May 15th, and should be accompanied by the names and addresses of not more than two persons to whom reference may be made. Further particulars may be had from the academic registrar.

Institute for the Scientific Treatment of Delinquency

To-day, Friday, March 17th, at 8.30 P.M., at University College, Gower-street, London, W.C., Dr. R. G. Gordon will give a lecture on the Relationship of Delinquency to the Broken Home. Admission is free.

Fellowship of Medicine and Post-Graduate Medical Association

Arrangements for this week will be found in our Medical Diary. At the Royal Albert Dock Hospital, on April 1st and 2nd, there will be a week-end course on clinical surgery, with special reference to the relation of technique and end-result. Demonstrations of medical ophthalmology, primarily intended for M.R.C.P. candidates, have been arranged as follows: Tuesday, March 21st, at 8.30 P.M., at the in-patient department of the West End Hospital for Nervous Diseases, Mr. Lindsay Rea, on the Fundus Oculi; Wednesday, March 22nd, at 5 P.M., at the Royal Westminster Ophthalmic Hospital, Broad-street, Mr. G. G. Penman, Fundi of Medical Interest; on Thursday, March 30th, at 8.30 P.M., also at the Royal Westminster Ophthalmic Hospital, Mr. C. L. Gimblett, on Some Points in Medical Ophthalmology. Further particulars of the courses may be had from the secretary of the Fellowship, 1, Wimpole-street, London, W. 1.

Royal Sanitary Institute

The last London meeting for this session will be held at the institute, 90, Buckingham Palace-road, S.W., on Wednesday, March 29th, at 5 P.M., when Lieut.-Colonel C. Waley Cohen will open a discussion entitled Standards in the Milk Industry: a joint responsibility of medical officers of health, producers, distributors, and the veterinary services. Lord Astor will take the chair.

Beit Memorial Fellowships for Medical Research

An election of junior Fellows will take place in July, and application should be made before May 18th, though late entries will be accepted up to June 1st. The Fellows elected in July will be required to begin work on Oct. 1st. Junior Fellowships are of the annual value of £400, and are usually held for three years. Forms of application and all information may be had from the hon. secretary of the fund, Prof. T. R. Elliott, F.R.S., University College Hospital Medical School, University-street, London, W.C.1.

International Congress on Cancer

An international congress on scientific and social aspects of the campaign against cancer is being held in Madrid from Oct. 25th to 30th, when it is hoped to form a permanent international body. It is organised by the Spanish League against Cancer, and will be divided into a social section and a scientific section. Further particulars may be had from the hon. secretary-general, Dr. Julio Bejarano, Facultad de Medicina (Decanato), Atocha 104, Madrid.

Memorial to Dr. Eichholz

An appeal to raise a sum of money to be used as an endowment for the benefit of the blind and deaf, as a fitting memorial to the late Dr. Alfred Eichholz, has been sent out by the presidents of the national institutes. Contributions may be sent to Mr. W. McG. Eagar, National Institute for the Blind, 224, Great Portland-street, W.1, or to Mr. A. J. Story, National Institute for the Deaf, 2, Bloomsbury-street, London, W.C.1.

Pay Beds

Lord Horder recently opened a new wing of Finchley Memorial Hospital which has cost £26,000. There are 26 private wards for people of moderate means, and accommodation for the nursing staff. In his speech Lord Horder recalled that 15 years ago he gave it as a dictum that no lay-out of a hospital should be passed by the responsible authorities unless it provided for pay beds.

Contraceptive Methods

Lectures and demonstrations are given to medical students at the headquarters of the Society for the Provision of Birth Control Clinics, at 153A, East-street, Walworth-road, S.E.17. Further particulars will be given by the secretary, Mrs. Evelyn Fuller.

Research into Rheumatic Diseases

The annual report of the Red Cross Rheumatism Clinic in Peto-place, London, presented last week, shows 78,580 attendances (plus 8040 in the private patients' department), as compared with 77,892 in 1931. Out of a total of 3154 cases discharged during the year, 36 per cent. of the men and 43 per cent. of the women were able to take treatment without interrupting their work, and a further 22 per cent. of the men and 6 per cent. of the women were hoping to return to their work at the end of their treatment. In moving the adoption of the report, Sir Arthur Stanley said that the results obtained at the clinic, both in the way of treatment and in the way of research, were gratifying. "More important than anything else," he added, "is, I believe, the need for additional research. But research costs money, and we have not the funds at our disposal to allow our highly qualified medical staff to indulge in an expansion of this research work which both we and they would like."

At the recent annual meeting of the Royal Bath Hospital at Harrogate the Earl of Harewood announced the initiation, in conjunction with the University of Leeds and the British Red Cross Society, of a scheme of research into the causes and treatment of rheumatoid arthritis. The research worker to be appointed would, he said, have an official position at Leeds University with the title of fellow in rheumatism research. The cost is estimated at £1000 a year, of which the British Red Cross is contributing one-fifth; this, said Lord Harewood, was a small beginning, but researches of this kind had a happy knack of developing into bigger things. Harrogate is well situated for the purpose: its Bath Hospital specialises in the treatment of rheumatic affections, and the Rawson convalescent home is available for controlled after-care.

Society of Medical Officers of Health

A meeting of this society will be held at 1, Upper Montague-street, Russell-square, London, W.C.. on Friday, March 24th, at 5 P.M. Dr. E. H. T. Nash (medical officer of health for Heston and Isleworth), Dr. J. Graham Forbes (senior medical officer of the London County Council), and Dr. Guy Bousfield (medical officer of the diphtheria immunisation clinics at Isleworth and elsewhere), will open a discussion on Diphtheria Immunisation, its Possibilities and Difficulties.

Maternity and Child Welfare Group.—At 8.30 P.M. on Friday, March 24th, at the same address, Mr. Sydney Owen will give a lecture on Neonatal Abnormalities.

General Nursing Council

Nine members of the General Nursing Council, to hold office for a term of five years, have been appointed in accordance with the schedule to the Nurses' Registration Act by the following bodies :—*Privy Council:* Lady Limerick and Lady Erleigh ; *Board of Education :* Miss E. R. Gwatkin, headmistress of Streatham Girls' High School, and Mrs. J. S. Courtauld ; *Ministry of Health:* Dr. M. A. Collins, medical superintendent of the Kent County Mental Hospital, Mr. H. L. Eason, medical superintendent of Guy's Hospital, Mr. M. H. Harper, house governor and secretary of the Royal Wolverhampton Hospital, Dr. M. H. Kettle, an assistant editor of THE LANCET, and Dr. Charles Porter, medical officer of health for Marylebone. These nominated members are additional to the 16 members elected by vote of State-registered nurses.

Brighton Hospitals

By the end of February the five large hospitals in Brighton had held their annual meetings. The work done in each institution during 1932 showed large increases in every department, but the hospitals' ordinary expenditure exceeded the ordinary income by £11.040.—The Royal Sussex County Hospital, which finished the year with a deficit of £5556, showed a record number of in-patients (3812). The out-patients numbered 16,617—a drop of 550 from the previous year—but the out-patient attendances (121,793) were more. Contributions from patients amounted to £8241, an increase of £545.—At the Royal Alexandra Hospital for Sick Children there were, during 1932, 1060 in-patients and 23,600 attendances in the out-patients' department.—At the Sussex Maternity and Women's Hospital income fell short of expenditure by £1880, and the deficit had to be made good by appropriating legacies instead of paying them to the capital account. The hospital has joined the Federated Superannuation Scheme.—The meeting of the Sussex Throat and Ear Hospital was marked by outspoken comments on sweepstakes for hospitals. The chairman said he had sufficient confidence in the people of Sussex to believe that so long as the hospital carried on its work efficiently and well, so long would it receive the support which was necessary to maintain it.—The Sussex Eye Hospital meeting received the 100th report of the governors. The special appeal for £25.000 to build a new hospital in connexion with the scheme of coördination with the Royal Sussex County Hospital had been completed. The cost had, however, greatly exceeded the estimated £25,000, and an appeal will be made for a further £5000, so that the new hospital may be opened free of debt.

London Clinic and Institute of Physical Medicine

At the annual general meeting of the British Humane Association, on March 1st. Lord Scarorough, the chairman, reported that the total loss on the year's working of this clinic was £354, compared with £1761 in 1931. The number of treatments given was 107,000, of which over 5000 were free of all cost to the patient. Sir Leonard Hill, the general supervisor, said that the activities of the institution were adequately indicated by its new name. The honorary medical advisory board had been strengthened by the addition of Sir Henry Gauvain, and the consulting staff by the addition of two new physicians, a gynæcologist, a manipulative surgeon, and an anæsthetist. With the help of the receiving-room officers and the visiting physicians all patients now received thorough examination before treatment, and when necessary they were sent to a general hospital for treatment. The successful treatment of chronic ulcers by light had been continued, and in addition to other skin diseases birth-marks had been found amenable to intense ultra-violet radiation. The department of pelvic diathermy had gained wide recognition, and diseased tonsils had been successfully treated by diathermy in place of excision. A water-cooled mercury-vapour throat lamp was used with success in cases of laryngeal tuberculosis. The inhalation department continued to be useful for catarrhal and asthmatic complaints, and the foam-bath department had been extended. The private ward had developed in usefulness, and application had been made to the London County Council for the use by clinic patients of ten beds at St. Stephen's Hospital. In a bacteriological laboratory autogenous vaccines were now made by irradiation of the culture fluid with ultra-violet light.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, March 21st.—5.30 P.M., GENERAL MEETING OF FELLOWS. 8.30 P.M., PATHOLOGY. Annual General Meeting. J. A. Murray : A Contribution to the Lymphstasis Hypothesis of the Origin of Cancer. E. H. Kettle and H. E. Archer : The Differential Diagnosis of Tuberculo-silicosis. P. Fildes and B. C. J. G. Knight : Auxin a Growth Factor. R. T. Brain : The Relationship Between the Viruses of Zoster and Varicella.

WEDNESDAY.—5 P.M., COMPARATIVE MEDICINE. Discussion : Deficiency Diseases. Openers : Sir Arnold Theiler and Prof. S. J. Cowell, followed by Dr. H. N. Green, Mr. M. C. Franklin, Dr. H. H. Green, Mr. W. R. Wooldridge, and others.

THURSDAY.—8.30 P.M., UROLOGY. Papers : Mr. A. E. Roche : Growths of the Testicle. Mr. Ralph Thompson: Some of the Rarer Types of Enlarged Prostate. Mr. V. W. Dix : Some Observations on Temporary Drainage of the Kidney.

FRIDAY.—5 P.M., DISEASE IN CHILDREN. (Cases at 4.30 P.M.) Paper : Mr. G. G. Penman : Concomitant Squint in Children, and Modern Methods of Treatment. 8 P.M., EPIDEMIOLOGY AND STATE MEDICINE. Paper : Dr. J. C. Bridge : The Influence of Industry upon Public Health.

MEDICO-LEGAL SOCIETY.

THURSDAY, March 23rd.—8.30 P.M. (at 11, Chandos-street, Cavendish-square, W.), Pathological Exhibition of Specimens and Demonstrations by Sir Bernard Spilsbury, Dr. W. S. O'Donovan, M.P., Dr. Arthur Davies, Dr. John Taylor, Dr. Gledhill, and Mr. W. G. Barnard.

CHELSEA CLINICAL SOCIETY.

TUESDAY, March 21st.—8.30 P.M. (at the Hotel Rembrandt, Thurloe-place, S.W.), preceded by a dinner at 7.30 P.M., Discussion on Doctors who were also Civilised Men, to be opened by Mr. J. C. Squire.

HUNTERIAN SOCIETY.

MONDAY, March 20th.—7.15 P.M. (at Simpson's Restaurant, Bird-in-Hand-court, Cheapside), Discussion on Practical Dietetics, to be opened by Prof. S. J Cowell.

SOCIETY OF MEDICAL OFFICERS OF HEALTH, 1, Upper Montague-street, W.C.

FRIDAY, March 24th.—5 P.M., Dr. E. H. T. Nash, Dr. J. Graham Forbes, and Dr. Guy Bousfield :Diphtheria Immunisation.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

TUESDAY, March 21st, and following THURSDAY.—5 P.M. Dr. Charles R. Box : On Complications of Specific Fevers. (Last Lumleian lecture.)

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn-fields, W.C.,

MONDAY, March 20th, and following FRIDAY.—5 P.M. Demonstrations of Specimens illustrating respectively Diseases of the Kidneys and Testicle. By Mr. C. E. Shattock.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London.

MONDAY, March 20th, to SATURDAY, March 25th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street. Cavendish-square, W., Tues., Practical Problems in Medicine and Surgery. Lecture by Dr. A. J. Scott Pinchin on the Effects on the Heart of Disease of other Systems and Indications in Treatment, at 4 P.M. (Free to Members and Associates of the Fellowship.)—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Post-graduate Course in Medicine, Surgery, and Gynæcology. All day.—BRITISH RED CROSS CLINIC FOR RHEUMATISM, Peto-place, N.W. Tues. and Thurs. at 8.30 P.M. Evening Course in Rheumatism.—BETHLEM ROYAL HOSPITAL, Monks' Orchard, Eden Park, Beckenham, Kent. Tues. and Frid., at 11 A.M., Course in Psychological Medicine.—WEST END HOSPITAL FOR NERVOUS DISEASES, 73, Welbeck-street, W. Daily at 5 P.M., Post-graduate Course in Neurology.—GORDON HOSPITAL, Vauxhall Bridge-road, S.W. Post-graduate Course in Proctology. Afternoons only.—HOSPITAL FOR CONSUMPTION, Brompton, S.W. Sat. and Sun., Week-end Course in Diseases of the Chest. All day.—LAMBETH HOSPITAL, Brook-street, S.E. Frid., 2 P.M., Demonstration of Selected Cases of General Interest, by Dr. G. F. Stebbing, assisted by the Staff of the Hospital.—WEST END HOSPITAL FOR NERVOUS DISEASES, Gloucester-gate, N.W. Tues., Demonstration on the Fundus Oculi, by Mr. Lindsay Rea, at 8.30 P.M. (Specially suitable for M.R.C.P. candidates.)—ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, Broad-street, W.C. Wed., Demonstration of Fundi of Medical Interest. By Mr. G. G. Penman, at 5 P.M. (Specially suitable for M.R.C.P. candidates.)—NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W. Tues. and Thurs., 8 P.M., Evening F.R.C.S. (Final) Course.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.

MONDAY, March 20th.—10 A.M., Medical Wards, Skin Dept., Genito-urinary Operations. 2 P.M., Medical, Surgical, Eye, and Gynæcological Out-patients, Surgical Wards, Operations. 4.15 P.M., Mr. Gibb: Demonstration of Eye Cases.

TUESDAY.—10 A.M., Medical Wards, Surgical Demonstration. 2 P.M., Medical, Surgical, Throat, Nose, and Ear Out-patients, Operations.

WEDNESDAY.—10 A.M., Medical Wards, Children's Out-patients. 2 P.M., Medical, Surgical, and Eye Out-patients.

THURSDAY.—10 A.M., Neurological Department, Fracture Demonstration. 2 P.M., Medical, Surgical, Eye, and Genito-urinary Out-patients. 4.15 P.M., Lecture, Mr. Woodd Walker: Chronic Empyema.

FRIDAY.—10 A.M., Skin Department. 12 noon, Lecture: Therapeutics. 2 P.M., Medical, Surgical, and Throat Out-patients. Operations. 4.15 P.M., Lecture, Dr. Ironside: Diseases of Nervous System.

SATURDAY.—10 A.M., Throat Operations, Medical and Surgical Wards. Surgical and Children's Out-patients. The lectures at 4.15 P.M. are open to all Medical Practitioners without fee.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, March 24th.—4 P.M., Mr. F. W. Watkyn-Thomas: Points in the Acute Mastoid Operation.

ST. PETER'S HOSPITAL FOR STONE, Henrietta-street, W.C.

WEDNESDAY, March 22nd.—3 P.M., Dr. Cuthbert Dukes: Laboratory Tests in Urinary Diseases.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, March 20th.—2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Symonds: Head Injuries.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Martin: Abscess of the Brain.

WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic. 3.30 P.M., Dr. James Collier: C

THURSDAY.—2 P.M., Dr. Kinni

Clinic. 3.30 P.M., Dr. R

Nervous Diseases.

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Mr. Elmquist: Demonstration of Re-educative Exercises. (In Exercise Room.)

ST. MARK'S HOSPITAL, City-road, E.C.

THURSDAY, March 23rd.—4 P.M., Mr. L. E. C. Norbury: Diverticulitis.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, March 23rd.—9 P.M., Mr. W. Daggett: Treatment of Otorrhœa.

NATIONAL COUNCIL FOR MENTAL HYGIENE.

WEDNESDAY, March 22nd.—5.30 P.M. (at 11, Chandos-street, Cavendish-square, W.), Dr. John Rickman: Ambition.

LONDON JEWISH HOSPITAL, Stepney Green, E.

THURSDAY, March 23rd.—4 P.M., Mr. Maurice Sorsby: Oto-laryngological Lecture Demonstration.

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W.

THURSDAY, March 23rd.—3 P.M., Dr. F. L. Golla will demonstrate.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, March 21st.—4.15 P.M., Mr. John Morley: Abdominal Adhesions and their Symptoms.

FRIDAY.—4.15 P.M., Dr. J. Wharton: Demonstration of Ophthalmological Cases.

ANCOATS HOSPITAL, Manchester.

THURSDAY, March 23rd.—4.15 P.M., Mr. E. E. Hughes: Renal Tumours.

GLASGOW POST-GRADUATE LECTURES.

WEDNESDAY, March 22nd.—4.15 P.M. (at the Victoria Infirmary), Mr. W. A. Sewell: Surgical Cases.

Vacancies

For further information refer to the advertisement columns

Altrincham General Hospital.—Hon. Gynæcologist.

Beit Memorial Fellowships for Medical Research.—Jun. Fellows. Each £100.

Belgrave Hospital for Children, Clapham-road, S.W.—Two H.P.'s and H.S. Each at rate of £100.

Birkenhead General Hospital.—Hon. Asst. Orthopædic Surgeon.

Blackburn, Queen's Park Institution and Infirmary.—Res. Jun. Asst. M.O. At rate of £150.

Bootle General Hospital.—Cas. O. At rate of £150.

Bristol University.—Sen. Pathologist for Dept. of Preventive Medicine. £700. Also Chair of Pathology.

Burden Mental Research Trust, B.M.A. House, Tavistock-square, W.C.—Principal Investigator. £750.

Burnley Municipal Hospital.—Jun. Res. M.O. £150.

H.S. to Special Depts. At rate of £175.

’s and H.S.’s. Also Cas. Surg. O.

Cardiff, Welsh National School of Medicine.—Independent Lecturer in Materia Medica and Pharmacology. £750.

Croydon, Mayday Hospital.—Part-time Visiting Radiologist. At rate of £200.

Doncaster Royal Infirmary.—Cas. H.S. £175.

Durham County Council.—H.S. £150.

Evelina Hospital for Sick Children, Southwark, S.E.—Hon. Physician to the Skin Dept. Also H.S. At rate of £120.

Finchley Memorial Hospital, Granville-road, N.—Res. M.O. At rate of £150.

Grimsby and District Hospital.—H.S. £200.

Guildford, Royal Surrey County Hospital.—Res. Med. and Surg. Officer and Registrar. £250. Also H.S. £150.

Halifax, St. Luke's Hospital.—Sen. Res. M.O. £350.

Harrogate, Royal Bath Hospital.—Res. M.O. At rate of £156.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Res. M.O. and H.P. At rate of £150 and £100 respectively.

Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W. Res. H.S. At rate of £75.

Ilford, King George Hospital.—Hon. Surgeon.

Infants Hospital, Vincent-square, Westminster.—Clin. Asst. to Out-patient Dept.

Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.

Leeds, Herzl Moser Hospital, Leopold-street.—R.M.O. £200.

Leeds General Infirmary.—Hon. Physician.

L.C. —Neurologists £2 12*s.* 6*d.* Radiologists £900.

Lond Reg. to Ear, Nose and Throat Dept. £150. Also Hon. Asst. Surgeon.

London Lock Hospital, 283, Harrow-road, W.—Surg. Reg. £100.

Liverpool, St. Paul's Eye Hospital, Oldhall-street.—H.S. At rate of £145.

Manchester, Ancoats Hospital.—H.S. At rate of £100.

Manchester Ear Hospital, Grosvenor-square, All Saints.—Res. H.S. £120.

Metropolitan Hospital, Kingsland-road, E.—Sen. and Jun. H.P.'s and H.S.'s. Also Two Cas. O.'s. Each at rate of £100.

Ministry of Health, Whitehall, S.W.—Vacancy on Medical Staff. £833.

Newcastle-upon-Tyne, Hospital for Sick Children.—H.P. Also Sen. and Jun. H.S. Each at rate of £100.

Paddington Hospital, Harrow-road, W.—M.O. £350.

Plymouth, S. Devon and E. Cornwall Hospital.—Hon. Joint M.O. for Massage and Electro-therapeutic Dept.

Princess Elizabeth of York Hospital for Children, Shadwell, E.—H.P. and Cas. O. Each £125.

Princess Louise Kensington Hospital for Children, St. Quintin-avenue, N. Kensington, W.—Clin. Asst. for Out-patient Dept. Also Hon. Anæsthetist.

Reading, Royal Berkshire Hospital.—Res. Anæsthetist. £150.

Royal College of Surgeons of England.—Two Leverhulme Research Scholarships. Each £100.

Royal Free Hospital, Gray's Inn-road, W.C.—Res. Cas. O. At rate of £150.

Royal London Ophthalmic Hospital, City-road, E.C.—Sen. Res. O. At rate of £150.

Royal Waterloo Hospital for Children and Women, Waterloo-road, 25 gns. Also Hon. Physician. At rate of £100.

—Cas. O., H.P., and Two H.S.'s. Each at rate of £100. Also Second H.S. At rate of £100.

South London Hospital for Women, Clapham Common, S.W.—Asst. Surgeon. Also Anæsthetist. 10*s* 6*d.* per attendance.

South Shields, Ing H.S. £150.

Sutton and Cheam M.O. £150.

Swansea General a At rate of £150.

West Bromwich and District General Hospital.—H.P. and Two Cas. H.S.'s. Each at rate of £200.

Westminster Hospital, Broad Sanctuary, S.W.—Jun. Asst. P H.S. At rate of £150 and £52.

Wigan At rate of £150.

Wolve —H.S. for Orthopædic Dept. and E Nose Dept. Each at rate of £100. Also Surg. Reg. and Res. Asst. Surg. At rate of £250.

Births, Marriages, and Deaths

BIRTHS

DULAKE.—On March 3rd, at Reigate, to Nina Dulake, M.B., D.O.M.S., wife of Lawrence Dulake, M.B., B.S.—a son.

FRYER.—On March 5th, at the Cottage Hospital, the wife of Dr. D. W. Fryer, of Abergavenny, of a son.

MCCARTAN.—On March 2nd, to the wife of William McCartan M.D., Bleak House, Epsom, Surrey—a daughter.

MCCULLAGH.—On March 2nd, at Harley House, the wife of W. McK. H. McCullagh, F.R.C.S., of a daughter.

MARRIAGES

WHITE—WALKER.—On March 4th, Ernest White, M.R.C.S., L.D.S. Eng., to Dorothea Walker, of Almsmead, Harrogate.

DEATHS

CREERY.—On March 7th, at Riverton, Coleraine, John Tate Creery, M.B., B.Ch., T.C.D., in his 76th year.

O'FERRALL.—On March 13th at Coldharbour-lane, S.W., Edward French O'Ferrall, L.R.C.P.

REYNOLDS.—On March 10th, in London, Major Douglas Reynolds, M.C., R.A.M.C., aged 49.

SOWRY.—On March 12th, at King-street, Newcastle, Staffs, George Herbert Sowry, M.D., F.R.C.S., M.R.C.P., aged 62 years.

WHITTAKER.—On March 8th, at First Avenue, Westcliff-on-Sea, Essex, William Mark Whittaker, M.A., M.B., T.C.D., L.R.C.S.I.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

THE HEALTH OF MERCHANT SEAMEN IN 1931

BY FLEET-SURGEON W. E. HOME, O.B.E.

THE return of deaths reported to the Board of Trade in 1931 of men employed in the mercantile marine is more interesting than its predecessors, for it tabulates the deaths of British seamen by ages in the same groups in which they were enumerated at the census of seamen in April of that year. As a result we can now calculate the death-rates for the different ages for 1931 with some degree of confidence. Unless otherwise stated, we are dealing here with British seamen only. They were enumerated at 108,882 (amongst them 1635 women, stewardesses, &c.), their deaths from disease were 315 (2·9 per 1000), from violence 280 (2·5); in all 595 (5·5). It was in 1930 that for the first time the deaths from disease were more numerous than those from violence (accidents, homicide, suicide, and heat stroke), formerly in great excess; the earliest known figures are those for 1901–02, showing by disease 596 but by violence 1067 (about half of these were in sailing ships, of which there then were 897 in the foreign trade, but in 1931 only one).

Ages.	Census of seamen, 1931.		British merchant seamen's deaths, 1931.					England and Wales, all occupied and retired civilian males, 1921–23. (Reg.-Gen., 1927.)			
	No.	Proportion.	Disease.		Violence.		Total rate.	Proportion.	Death-rates.		
			No.	Rate.	No	Rate.			Disease.	Violence.	Total.
–20	10,994	101	11	1·00	40	3·6	4·6	105	2·1	0·4	2·5
20–	18,163	167	21	1·15	28	1·5	2·6	114	3·1	0·4	3·5
25–34	35,163	324	63	1·8	83	2·3	4·1	213	3·6	0·4	4·0
35–44	22,842	210	58	2·5	60	2·6	5·1	206	5·8	0·6	6·4
45–54	15,213	140	83	5·5	46	3·0	8·5	177	10·8	0·8	11·6
55–64	5,782	53	67	11·6	21	3·6	15·2	113	24·5	1·2	25·7
65–	561	5	12	21·4	2	3·6	25·0	72	90·8	2·1	92·9
Not stated	164	—	—	—	—	—	—	—	—	—	—
—	108,882	1000	315	2·9	280	2·6	5·5	1000	7·8	0·6	8·4
									ages 16–65 only.		

In the Table I have compiled are shown, in the first column, the grouping of the ages; in the second, the numbers enumerated; in the third, the proportion in the merchant service per 1000 at the various ages; then by ages the deaths from disease and the death-rate; the deaths by violence and the death-rate; and next, the total death-rate. For comparison, in succeeding columns are given the age proportions and the death-rates by disease, violence, and total of the largest group in the Registrar-General's Occupational Mortality Supplement for 1921, the five millions of "All Occupied and Retired Civilian Males" in 1921–23. Inspection shows the death-rate from disease increasing with age among seamen much as it does ashore, slowly, that is up to 45, and thereafter more rapidly, the employed seamen's rate always remaining about half that ashore; but the rates from violence are at most ages about four times higher at sea, and under age 20 when boys and young seamen are beginning to know and have not yet learned how to avoid the risks of their trade, it is nine times as much.

The death-rate for seamen at all ages to 65 (5·5) is much less than the civilian rate (8·4), as there are so many more seamen, proportionally, in the lower ages with the lower death-rates. Of individual diseases the most deadly were pneumonia 45 (0·4) and phthisis 34 (0·3); they caused, proportionally, more deaths among the 49,215 lascars, pneumonia 35 (0·7), and phthisis 28 (0·6). The nosological list has been extended this year, indeed perhaps too much has been attempted. Thus a line is now given to syphilis with its six deaths, while another line is wasted on the two deaths from general paralysis and locomotor ataxia. One wonders how men with diseases so chronic and well known, obviously too so advanced, managed to pass the medical examination when they joined their last ships.

THE HOUSING OF THE POOR

ON March 9th Dr. C. Killick Millard, medical officer of health for Leicester, gave a Chadwick lecture in London in which he pointed out that the housing problem to-day is the problem of providing decent healthy housing for the poor. Those who are not of the poor can now be catered for by private enterprise subject to the laws of supply and demand. In the past, he said, the poor never really have been decently housed, and there is no prospect that they ever will be in the future unless the State, in one way or other, is prepared to pay part of the cost. In other words, the housing problem, which of course includes the slum problem, cannot be solved without the expenditure of public money. But it is to the interest of the State that all its citizens should be decently housed. Money spent in achieving this end will be wise expenditure, and will incidentally relieve unemployment, and thus help the country back to true prosperity.

In striving to secure decent healthy housing for the poor, Dr. Millard continued, we must not stickle too much about "standards." A small loaf is generally better than no bread. It is better for all to have reasonably good houses than for some favoured ones to have very good houses and the rest to have very bad houses, or no houses at all. If he were given plenary powers his policy would be as follows:—

1. As municipal houses have largely got into the hands of people who are not the ones most in need of housing assistance, their rents should be raised, after due notice, to the full economic level.
2. Many tenants would be glad to stay on and would pay the increased rent, so that these houses would cease to be a charge on the community. The money so saved, and it would be a very substantial amount, should be used for giving assistance to others who really needed help.
3. Tenants able, but unwilling, to pay the increased rent should be given a reasonable time in which to find other accommodation. They could well be catered for by private enterprise.
4. Tenants claiming to be unable to pay the increased rent should be required to submit to an investigation into their circumstances, and if their claim is substantiated they should be granted assistance in the form of temporary rebates from the rent according to scale, such scale to be devised to give special consideration for dependent children. All rebates would be subject to periodical revision and would be regarded and administered as a special form of public assistance.
5. Tenants without children, and not likely to have any, who are occupying a larger house than they require, and who are not able to pay the economic rent, should be transferred to a smaller house.
6. Persons living in privately owned houses, but unable to pay the rent, or requiring a larger or better house, should be entitled to similar assistance, provided their circumstances justify it.
7. Overcrowding, being one of the worst features of slum life, must be relieved before the slum problem can be effectually dealt with. The 1930 Housing Act should be amended to enable overcrowding to be dealt with under Part II. as well as under Part I. This is urgently necessary.
8. *Reconditioning.*—In view of the urgent need of houses to let at a rental within reach of the poor.

reconditioning of old houses, as far as is practicable, ought to be encouraged as a national policy. Where owners are unable to undertake reconditioning the community (local authority or public utility society) should do so; something was to be said for a national housing trust, with a national outlook and national support, but with local branches. Reconditioning need not entail much expense on the community. Necessary repairs to all houses, new or old, should be enforced more vigorously, and landlords in default should be penalised.

9. *Demolition.*—For the present and so long as the shortage of houses continues acute, a "massed attack on the slums"—i.e., schemes of wholesale demolition on a large scale—will be difficult if not impracticable, however much we may wish to see old and inferior houses swept away. The urgent need in most places is for more houses and for cheaper houses. When these are available demolition will be an easy task. In the meanwhile, only the worst houses to be demolished (under Part II. of the 1930 Act), but there will be enough of these to keep the building trade busy with replacement houses for a long time to come.

10. *Subsidies.*—Subsidies under the 1924 Housing Act should cease, but in place thereof the community ought to spend a substantial amount annually in giving temporary help towards rent to those who really need it, and who would not be able to secure decent healthy housing without it. The national exchequer should share with local authorities the cost of this as a set-off against what will be saved by the cessation of building subsidies.

Dr. Millard calculates that the saving to the community by stopping the 1924 Act subsidy will be about £400,000 per annum, and this will be *cumulative*, going on automatically for 40 years. Thus at the end of ten years it will be £4,000,000 per annum, and so on. The amount to be spent on rent assistance, on the other hand, will *not* be cumulative. Moreover, as prosperity returns the need will rapidly diminish.

PUBLICITY AND CRIME

THE scientific study of crime is handicapped more severely than the scientific study of most other human ills. The reason for this, as Mr. Kingsley Martin, the editor of the *New Statesman*, explained in a lecture to the Institute for the Scientific Treatment of Delinquency on March 3rd, is that both press and public are vitally interested in maintaining a different attitude to crime altogether—one based on the most primitive motives and entirely opposed to any attempt to regard crime from a reasonable point of view. To the inhabitants of an industrial civilisation, whose lives are for the most part extremely uninteresting, it is a source of joy to experience vicariously the satisfaction of their basic instincts in identifying themselves either with the hunter, in the form of the skilful and merciless detective, or with the hunted, in the form of the villainous criminal or the hapless victim. To render the satisfaction complete it is necessary that the crime shall have a considerable sexual content. Those responsible for the policy of many of our newspapers make full use of the tremendous opportunities of profit which lie in exploiting this instinctive hunger for horror.

It is permissible to ask "Why not?" It might seem at first sight that to read of lust and violence affords a harmless outlet for passions that would otherwise find their expression in deeds. Mr. Martin, however, brought forward evidence that the deliberate cultivation by the press of this attitude towards the crime increases crime itself, and tends to defeat the efforts of society to prevent and to punish it. Unfortunately, the adequate defence of a murderer rests, he said, on the facts of the crime being sensational enough to justify a newspaper in paying a sufficient sum for the accused man's life story to enable him to employ expensive counsel, while at other times publicity may prejudice the prisoner's case. In a debate in the House of Lords it was suggested that murder reports could be restricted, as divorce reports have been; but Mr. Martin believes that it would be against public policy to prevent the fullest reporting of the trial itself; the matter which needs strict censorship is the preliminary hearing before the magistrate.

The survival of the human race depends on whether man as a species can master his instincts by means of reason. In the case of crime, which is a disease of civilised communities, man is not only making little attempt to master his instincts, but is deliberately using a great part of his reasoning faculty to amplify a wasteful and disastrous concession to them. Those few who see the necessity for studying crime objectively have to face the vast struggle of persuading many millions of their fellows and several dozen powerful and determined corporations to give up a practice which is very dear to their hearts—that of regarding it sentimentally and dramatically.

THE HYGIENE OF MENSTRUATION

THE hygiene of menstruation has made great strides in the last decade. The tradition that bathing is dangerous has been discarded in all educated households, where now the doctrine prevails that comfort depends as much on an ample hot water supply as on the frequent replacement of soiled absorbent pads. The pads now most popular are those intended to be destroyed by burning or by solution in water after use, and girls are taught to avoid discomfort by changing them freely. Facilities such as a slot machine and a tin for used pads are being increasingly provided in the pavilions of school playgrounds, while at some hostels for adults, notably the Nurses' Home at the Middlesex Hospital, a special gas incinerator is installed for this purpose. When frequent changes can be made the ordinary untreated gauze and wool pad on the market has no serious drawbacks; when, however, conditions are inopportune for such changes, the use of a pad impregnated with a substance which inhibits the growth of bacteria doubtless has advantages. The manufacturers of Sterisan sanitary towels claim that the gauze and outer absorbent wool of their product are specially treated to inhibit bacterial growth. The attachment of a pad by means of a soft rubber belt, such as that made by Kleinert Rubber Co. in various sizes, instead of a rigid belt or a piece of knotted tape, and the elimination of all sources of irritation or local soreness, is likely to reduce greatly the number of women who complain of menstrual pain. Unfortunately, the answers received in connexion with most statistical inquiries do not differentiate between deep pain attributable to the period and superficial soreness or dragging, which can be eliminated by careful selection and adjustment of belts and pads, and, most important, frequent renewal of the latter.

Appointments

Certifying Surgeons under the Factory and Workshop Acts: GREEN, H. J., M.B., Ch.B. Aberd. (Banff); JAMIESON, ELIZABETH G., M.B., Ch.B. Glasg. (Kilbride, Bute); LALONDE, T. P., M.B., Ch.B. Bristol (Romsey); and MEIKLE, W., M.B., Ch.B. Glasg. (Whittlesey).

London County Council: WEST, H. O., M.D., B.S., D.P.H., Medical Superintendent, promoted from Medical Superintendent, Archway Hospital, to St. Giles Hospital; AGASSIZ, C. D. S., M.D., M.R.C.P., Ch.B., D.P.H., promoted from Medical Superintendent, High Wood Hospital for Children, to Archway Hospital; READE, A. G. L., M.R.C.S., L.R.C.P., transferred from Senior Medical Officer in the Public Health Department to High Wood Hospital for Children.

WEST SUSSEX ASSOCIATED HOSPITALS CONTRIBUTORY FUND.—On March 4th, at the annual meeting at Chichester, it was reported that the membership during 1932 had increased by 1200, bringing the total membership to 10,900. The available income amounted to £5,502, of which £1845 had been paid to various hospitals for treatment of members.

ADDRESSES AND ORIGINAL ARTICLES

PNEUMOCOCCAL INFECTIONS

BY ROBERT CRUICKSHANK, M.D. ABERD., D.P.H.
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II.—LOBAR PNEUMONIA IN THE COMMUNITY *

IN the previous lecture certain clinical features of lobar pneumonia were considered. I propose now to discuss this affection in its public health aspects; reviewing, in particular, bacteriological and epidemiological evidence relating to the seasonal incidence and mode of spread of lobar pneumonia, and the factors which influence its mortality-rate in an infected community. I shall consider first the case-mortality of the infection which depends primarily on the inter-relationship between the virulence of the infecting organism and the resistance of the exposed persons in the community.

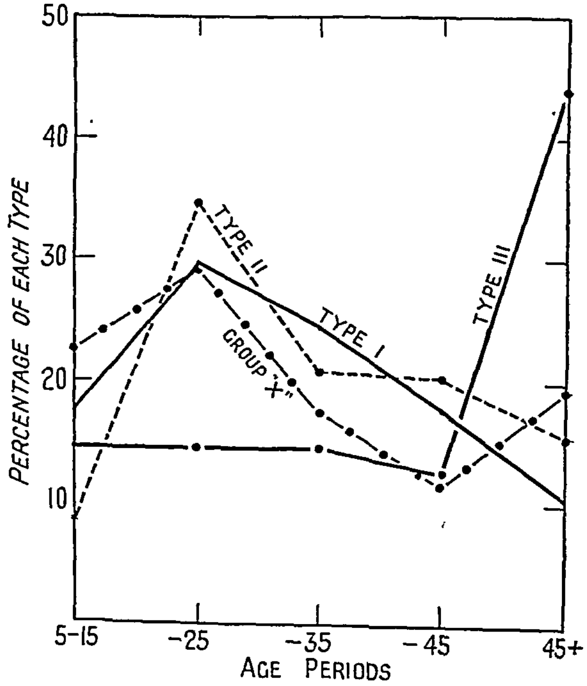
The Infecting Organism

It is customary to ascribe the variations which occur in the severity and mortality of a particular infection from time to time to changing degrees of virulence of the infecting organism rather than to altered resistance of the host. This doctrine has been accepted perhaps too readily as a sufficient explanation of the epidemiological facts, and there is evidence that this theory may have to be modified or even discarded. For instance, the experimental observations of Webster show that the virulence of such organisms as those concerned in mouse typhoid or in pasteurellosis of rabbits is the same at the beginning as at the end of an epidemic and from one epidemic to another, is the same whether the animals die of an acute or of a chronic infection, is unaltered in healthy contacts, and is not increased by animal passage. This view, as applied to infections generally, may seem heterodox, but it is quite possible in spite of criticism that it is fundamentally correct. It has, at any rate, the asset of being based on results obtained from naturally occurring infections in animals. Unfortunately for its application to lobar pneumonia, there is presented in this disease the problem of an infection caused by a series of organisms, each of the members of which seems to possess its own degree of virulence. It is necessary, therefore, to study the behaviour of each type of organism as a separate epidemiological problem, and for this purpose to ascertain the relative incidence of the different pneumococcal types as infecting organisms in a particular community. When the part which the infecting organism plays in the mortality-rate of lobar pneumonia is to be assessed, therefore, the questions which arise are: (1) Is the proportion of the different types the same in different countries or in different parts of the same country—e.g., in Britain and America, in London and Glasgow? (2) Is the proportion constant from one year to another in the same community? (3) Since age is an important factor in the mortality from pneumonia, do the several types attack the same or different age-groups?

(1) It will be seen at once (Table I.) that the incidence of Types I., II., III., and Group "X" pneumonia varies in different countries. If only America and Britain are compared, in the former country Types I. and II. account for 50–65 per cent., Type III. 10–15 per cent., and Group "X" 25–35 per cent. of the infections, whereas in Glasgow the corresponding figures are 70–75 per cent., 3–4 per cent., and 20–25 per cent. A possible explanation of the difference in incidence will be discussed later, but it is obvious that comparison of the crude mortality-rates from lobar pneumonia in the two countries would be unfair unless the differing incidence of the pneumococcal types are taken into account.

(2) The case-mortality from lobar pneumonia may vary considerably from year to year. This variation might be the result of an alteration in the incidence of the infecting types apart from a change in the virulence of any individual type or a variation in the quality of the exposed community. There is some evidence that the relative incidence of the infecting types varies in the same community in different seasons—e.g., Griffith (1928) found in the Smethwick district of London that Type II. pneumonia diminished from 32·6 in 1920–22 to 7·4 per cent. in 1924–27, while there was a corresponding increase in Group "X" infections from 30 to 53·7 per cent. Cecil, Baldwin, and Larsen (1927) in a five-years' survey also reported variations from year to year. Our own figures—based on 875 cases—in three successive winters for Types I., II., III., and Group "X" pneumonia are February–September, 1930, 32, 45, 2, and 19 per cent., September, 1930–August, 1931, 37, 32, 5, and 24, and September, 1931–August, 1932, 37, 30, 4, and 29 per cent., an increase during the three years in Type I. and Group "X" infections, and a corresponding decrease in those of Type II. These figures are open to the criticism that they are not representative of all the cases of lobar pneumonia in the infected community. Nevertheless, in order to contrast the severity of lobar pneumonia in the same community in different years, an accurate

PERCENTAGE DISTRIBUTION IN AGE-GROUPS
of Types I., II., III., and Group "X" pneumonia (1115 cases)



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* The second Milroy lecture for 1933 delivered before the Royal College of Physicians of London on Feb. 28th. Lect. I. appeared in our last issue.

knowledge of the incidence of the infecting types in each year would seem to be essential.

(3) An investigation of the age-incidence of Types I., II., III., and Group "X" pneumonia might be undertaken to discover what difference exists in the age-distribution of the different types, and to compare the age-incidence of the same types in different countries and localities. There are not many available figures relating to these points. Our results indicate that Type III. infections are most common in older individuals, while Group "X" pneumonia, although sharing in the general increase during the third and fourth decades, has a predilection for the young and the old, say under 10 and over 50. Cecil and Plummer (1932) have made an analysis of the age-incidence of Types I. and II. pneumonia, and a comparison of their figures with those of Glasgow shows that in both groups Type I. pneumonia is rather more common in the "teens," while Type II. pneumonia has its greatest incidence in the third decade of life (see Figure). This is in itself an interesting and unexplained phenomenon. Perhaps the apparently greater invasiveness of Type I. pneumococcus (see Lecture I.) may be concerned in the greater incidence of this infection in the more resistant adolescent.

The Infected Community

With regard to the resistance of the community exposed to infection, there are three or four obvious factors which influence the mortality-rate from lobar pneumonia.

(1) *Age.*—In typhus and typhoid fever the influence of age on prognosis is well known. In the case death-rate from lobar pneumonia also age is of paramount importance (see Lect. I., Fig. 2), although in statistical statements of mortality the influence of age of attack is often overlooked, particularly in estimating the value of remedial measures, such as antipneumococcal serum, or in contrasting mortality-rates in different institutions on the basis of small numbers.

(2) *Constitution.*—This may be interpreted rather vaguely as the inherited resistance of a community. If the incidence and death-rates from Types I., II., III., and Group "X" pneumonia in America and Glasgow are compared (Table I.), two differences are apparent—(*a*) a greater incidence in America of Type III. and Group "X" pneumonia; (*b*) a higher mortality-rate for all pneumococcal types in that country. Type III. and Group "X" pneumococci are apparently much less infective or invasive organisms than Types I. and II., being found frequently in the throats of normal people tending to infect older and debilitated perso The frequency of these types as a cause of lo pneumonia in America suggests a lessened resista of the community to pneumococcal infections general, a suggestion borne out by the high mortality from lobar pneumonia in America tha in Britain. Support for this contention is al gained by comparing the mortality-rate from lob pneumonia in the Bellevue and the Rockefell Institute Hospitals, which admit different classes patients (Cecil, 1932, see Table I.). The Souther races, among whom pneumonia is not so common, ar apparently less resistant to the infection when the migrate to districts where this affection is mor prevalent (see also Lister, 1913).

TABLE I

The Incidence of and Mortality from Pneumococcal Types in Lobar Pneumonia in Various Countries.

Country.	Year.	No. of cases.	Percentage incidence of types.			
			I.	II.	III.	X.
U.S.A. (Rockefeller Institute).	1913–17	454	33·3 (11·6)*	29 3 (28·5)	13·0 (43·0)	24·6 (12·8)
U.S.A. (Bellevue Hospital).	1920–30	4310	32·1 (28·2)	23·0 (48·9)	11·1 (42·7)	33·8 (31·3)
Denmark (Christensen and Jurgens).	1923–25	298	28	28	10	34
Britain (collected; Dible).	1921–31	766	34·4	31·4	3·7	30·6
Glasgow.	1930–32	1215	36·2 (10·8)	35·5 (21·5)	3·6 (40 9)	24·7 (8·6)

Figures in parentheses represent case-mortality rate.
* Mostly serum-treated.

(3) *Climate.*—Meteorological conditions may influence the incidence and possibly also the mortalit of lobar pneumonia in two ways. The greater severity of this affection during the spring months may be associated with a general lowering of resistance, owing to such factors as the absence of sunlight and lower respiratory exchange (Madsen, 1930). For example, Macgregor (1933), in an analysis of the deaths from lobar pneumonia in the isolation hospitals in Glasgow during 1930–31, found that the death-rate was highest in the first four months of the year (20–21 per cent.), lowest in the four summer months (12 per cent.), and intermediate in the last four months (15–16 per cent.). From January to April, 1932, following an exceptionally mild winter, the death-rate was only 13·6 per cent. Again, in a city like Glasgow, where meteorological conditions predispose to recurring minor respiratory infections, the relationship of these to the incidence of lobar pneumonia is quite unknown and well worth investigation. It is possible that some of these infections may increase the general resistance to the pneumococcus. On the other hand, resistance may be weakened, as undoubtedly happens when influenza is present in the population. One may conclude by saying that the factors affecting the general mortality from pneumonia are so complex that very great caution has to be exercised when comparing the death-rate in different countries, or even in different towns in the same country. The principal factors for which allowance must be made are the incidence of the different pneumococcal types, the prevailing age of attack, the constitution of the individuals exposed to infection, and the climatic conditions.

The Seasonal Incidence of Lobar Pneumonia

Pneumonia in Britain is notifiable as "acute primary pneumonia" or "acute influenzal pneumonia," which means that no opportunity is afforded of determining separately the incidence of pneumococcal lobar and broncho-pneumonia. In January, 1931, the International Classification of Causes of Death made provision for discarding the use of the term "pneumonia," and the practitioner is asked to state, if possible, whether the case was one of lobar or broncho-pneumonia. Although it is impossible therefore to estimate completely the seasonal incidence of lobar pneumonia, Macgregor (1933) has recorded separately for Glasgow (January, 1930–June, 1932) the weekly deaths from lobar and broncho-pneumonia in the age-group 10–55, when confusion between the two infections is least likely to occur. There is every winter a regular and sustained increase in the deaths from lobar pneumonia during the first four months of the year, and even allowing for a slightly higher case-mortality rate during this period it seems obvious that the greatest incidence of lobar pneumonia in Glasgow occurs in January to April. When this spring incidence of lobar pneumonia was compared with the annual mass movement of the pneumonias in the city as indicated by the notified cases, it was found that there was no correlation—e.g., "in 1929–30 the winter prevalence (of 'pneumonia') took the form of a sustained fluctuating curve; in 1930–31 an abrupt ascent took place in the middle of November reaching epidemic proportions during the first three weeks of December; in 1931–32 the salient feature was the onset of a sudden explosive incidence lasting for ten weeks from the end of February to the middle of April"—I quote from Macgregor's paper. Support for Macgregor's analysis is obtained from Denmark where lobar pneumonia, broncho-pneumonia, and tracheo-bronchitis are separately notified. Madsen (1930) has compared the seasonal incidence and death-rate from these three infections, and his charts show that whereas broncho-pneumonia and tracheo-bronchitis have superimposed curves, lobar pneumonia has an independent curve occurring later in the winter.

The Spread of Lobar Pneumonia in the Community

Consideration may now be given to lobar pneumonia as a specific infectious disease and the mode of spread of the infection. What are the accepted facts? That the known infectivity of lobar pneumonia is of a low order is attested by the rarity of the occurrence of more than one case in a family, the comparative absence of the disease among nurses and others attendant upon patients, and the infrequency of epidemic outbreaks. As regards seasonal incidence, lobar pneumonia conforms to the behaviour of an infectious disease, although possibly this may be dependent upon changes in the resistance of the community. Again, there is the evidence of the bacteriological facts. Although 70–75 per cent. of cases of lobar pneumonia are due to Types I. and II. pneumococci, these types are rarely found in the throats of healthy persons, whereas those of Type III. and of the heterogeneous Group "X" pneumococci are carried either constantly or intermittently by 30–90 per cent. of the community. These bacteriological facts would in themselves point to the likelihood that lobar pneumonia is, in the main, caused by an exogenous infecting organism. However, Griffith (1928) has demonstrated that one type of pneumococcus may be changed into another by injecting a live "rough" culture of pneumococcus A along with a killed "smooth" emulsion of pneumococcus B into mice from which were recovered a living smooth B type. A similar change of type has since been accomplished in vitro (Dawson and Sia, 1931), and it may be added that Goebel and Avery (1931) have succeeded in linking a derivative of Type III. S.S.S. to horse serum globulin, thus producing a synthetic Type III. pneumococcus which behaves antigenically exactly like the natural organism. Griffith further observed that after an attack of lobar pneumonia the infecting pneumococcal type might quickly disappear from the patient's respiratory tract and be replaced by Group "X" pneumococcus. The important practical question is, Does change of type occur under natural conditions?

As regards the phenomena of infection, therefore, two possibilities present themselves. Lobar pneumonia may be presumed to result from either a biological change in the saprophytic group "X" pneumococci to the more infective Types I. and II., or, on the other hand, infection with an exogenous Type I. or II. pneumococcus derived from an acute clinical case, a convalescent carrier, or a healthy contact carrier, provided these are shown to exist, and provided this chain of events can be demonstrated. It seems somewhat paradoxical that there should exist in nature some 30 fixed immutable types of pneumococcus, of which only two or three should constantly act as infecting strains. It is more natural to assume that the several strains are capable of mutation under certain circumstances in response to changing environment. On the other hand, multiplicity of serological types of a particular species is not exceptional in the bacteriological world. For instance, the hæmolytic streptococcus group comprises many serological types, as do also the dysentery and paradysentery bacilli, or even the coli-typhoid group. Further, in the typhoid-salmonella family there are close affinities in the "rough" state, but it is not suggested that *B. typhosus* may under natural conditions assume the characters of Gaertner's bacillus. As an indication of the stability of the pneumococcus, Neufeld reminds us that his original Type I. has maintained its specificity in artificial culture for almost a quarter of a century. A further fact of importance is that before change of type can occur in the pneumococcus under the experimental conditions mentioned, the original type must be denuded of its capsule; it is rare to find a wholly "rough" strain of pneumococcus in the throat by cultural methods (Webster and Hughes, 1931). Thus the occurrence of biological change in the pneumococcus under natural conditions is a phenomenon which there is little chance at present of either proving or disproving, while there are several considerations in favour of the other view which should be closely examined.

The evidence in support of the argument that lobar pneumonia is infectious may be advanced along the following lines: the occurrence of epidemics due to a particular type of pneumococcus, the infectivity of the acute case, and since this is apparently low, the occurrence of convalescent and contact carriers and the infectivity of these carriers.

Epidemicity of lobar pneumonia.—Although lobar pneumonia in epidemic form has been frequently reported—e.g., in Italy during the eighteenth century—it is only within recent years that bacteriological proof of its "epidemicity" has been available. Stillman (1917) reported two small epidemics caused by Type I. pneumococcus, while Nichols' account (1917) of an outbreak of lobar pneumonia among American recruits in a camp of 43,000 men at El Paso in 1916–17, beginning on Nov. 1st and reaching its peak in February, has the features of a true epidemic. Among the typed cases 78 per cent. were due to Types I. and II. pneumococcus, and there was direct evidence of tent, company, and regimental contagion. Perhaps the best record of the kind is that of Strom[†] (1932) who in an isolated orphanage reported 12 cases of lobar pneumonia and 2 cases of otitis media among 87 boys, aged 5–20, between Feb. 10th and June 15th, 1931. Type I. pneumococcus was recovered in all the cases examined in the acute stage. It is noteworthy that the attack-rate was greatest and the infection most severe among the boys who had been longest in the orphanage. Numerous other epidemiological data could be given—the localised outbreaks noted by Baerman (1914) among the labourers on a Java plantation, the greater incidence of pneumonia at public boarding schools among boys who have common dormitories than among girls who sleep in cubicles (Glover, 1932), and Macgregor's evidence locality in different years, can only be made if due attention is given to such factors as the percentage incidence of the several pneumococcal types, the age-distribution and constitution of the exposed community, and the climatic conditions. No accurate data are available about the relative incidence of lobar pneumonia in this country, and a plea is made for the separate notification of lobar and broncho-pneumonia. Evidence is adduced in favour of the view that lobar pneumonia is an infectious disease endemic in large cities, with an annual winter epidemic, reaching maximum prevalence in the spring. The reservoirs of infection may be the contact and convalescent carriers, both of whom have been shown to occur in considerable proportion. Further investigation is required to clarify the mode of spread of the infection.

[†] I am indebted to Miss R. Gulbransen for the translation of this paper.

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THE RELATIONSHIP OF THE ALBUMINURIA OF PREGNANCY TO CHRONIC NEPHRITIS

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UNTIL the second decade of the present century it was believed that almost the only risk attaching to the albuminuria of pregnancy was that it might develop into eclampsia, and the only dangers associated with eclampsia were the immediate maternal and fœtal mortality. In 1921, however, Caldwell and Lyle [1] reported that 2 out of 22 patients who had recovered from eclampsia were found at a later date to suffer from chronic nephritis. In the same year Gibson [2] took a much more gloomy view of the sequelæ and late results of the toxæmic albuminuria of pregnancy, and suggested that such women should not be allowed to place their lives in jeopardy by again becoming pregnant. Six years later Young [3] reported that several of his patients had had eclampsia more than once, and that the subsequent obstetric histories of a considerable proportion of his patients who had suffered from the toxæmias of pregnancy were anything but satisfactory. In a more recent paper [4] he estimates that in England and Wales between 7000 and 10,000 women annually acquire a more or less persisting disability as a result of the pregnancy toxæmias. In 1931 Peckham and Stout [5] opined that one out of every three women who suffer from a toxæmia of pregnancy (excluding vomiting and eclampsia) will ultimately be found to have nephritis. Stander and Peckham [6] in the same year stated that nephritis associated with pregnancy occurred more frequently in women between the ages of 30 and 40, and assumed that multiparity per se was an important predisposing factor. Of 236 patients diagnosed as nephritics only 135 were traced. Of these 46 had died, 37 from nephritis, while the average duration of life after the condition had been diagnosed was only 3·37 years.

Other papers expressing similar views could be quoted, but that by Gibberd [7] is the only one concerned with results in England. After giving valuable figures from the practice of Guy's Hospital he asserts, that, if the standards of treatment which in the past have been considered adequate be adopted, at least 10 per cent. of previously healthy women who suffer from albuminuria during pregnancy will develop chronic nephritis. Not only must a woman who wishes to have a baby accept a 0·4 per cent. risk of death during pregnancy, childbirth, or the puerperium, but also a 0·5 per cent. risk of acquiring chronic nephritis over and above a much higher risk of subsequent ill-health. In other words, the remote mortality from childbirth is greater than the immediate.

This alarming contention is based on the results of the subsequent investigation of 89 out of 300 cases of albuminuria. Of these 89 women, 79 were stated to be healthy before pregnancy, although when examined at a later date 9, or 11·4 per cent., were found to be suffering from chronic nephritis. The following objections to such a contention offer themselves :

(1) Only 89 out of 300, or 30 per cent. of the cases, were subsequently investigated.
(2) It was assumed that because the specimen of urine examined when the patient first came under observation did not contain albumin, she did not suffer from nephritis.
(3) The criteria on which a diagnosis of nephritis is made are not specified.
(4) The ages of the patients are not mentioned.
(5) The numbers are far too small to allow of such an important conclusion being reached.
(6) No control observations have been made on comparable numbers of unmarried women.

As similar objections could be offered to the conclusions arrived at by the other authors, it occurred to me that the national data available at the General Register Office might throw light on the subject. Through the courtesy of the Registrar-General for England and Wales, to whom I express my sincere thanks, I have been able to study the Decennial Report for 1911–1920, prior to its publication, and other relevant statistics at Somerset House, and I have much pleasure in acknowledging the very great help and friendly interest which were offered by his staff.

The Registrar-General's Figures

The report deals with an estimated mean population of 19,239,700 females. The average annual number of births was 809,622, and it may be assumed that the number of twins was more than offset by the number of stillbirths which were not registered during the period under review. The number of multiple births is given in the annual report for Scotland, but not in that for England and Wales. In 1930 2557 out of 94,549 births were multiple, or 2·704 per cent. In the same year 4·007 per cent. of the births in England and Wales were stillborn. If it be taken that 4 per cent. of the mothers suffered from the albuminuria of pregnancy and that 5 per cent. of all births were illegitimate, we are left with some 30,800 cases occurring in married women. Of this number it is postulated that 3080 should have subsequently suffered from chronic nephritis, and that in each year* over 2700 previously healthy women should have acquired nephritis simply and solely because they gave birth to children. Yet the average annual number of deaths in females of all ages from that disease during the period under review was only 5637. Moreover, it is fair to point out that antenatal clinics were not widely established during this period. In the Rotunda Hospital reports for the last two years the incidence of albuminuria has been about 30 per cent., and R. E. Tottenham supplies similar figures for Hong-Kong, another centre where antenatal clinics have not been developed. Had the incidence of the albuminuria of pregnancy between the years 1911–1920 been 20 per cent., as it probably was, then 13,500 previously healthy women should have acquired chronic nephritis in each year!

The first important point which emerged from the figures was that the mortality curves from Bright's disease in females have shown the same upward or downward tendencies as those for males in every year except three since they were first recorded in 1861. It is clear from Table I. that the mortality-rates for both males and females rose sharply in every succeeding decennium until the one under review, in which a fall occurred in those for both sexes. Although part, or all, of this apparent increase may be due to increasing care in death certification and changes in medical opinion as to the importance of kidney lesions, leading to transference from other groups such as "old age," the significant point is that the operation of these factors affected the rates for both sexes in a similar direction.

TABLE I

Mean Annual Mortality, per 1,000,000 *Living (Standardised), from Acute and Chronic Nephritis, Bright's Disease*

	Males.	Females.
1861–70	153	95
1871–80	269	179
1881–90	364	265
1891–1900	418	308
1901–10	435	325
1911–20	406	302

Secondly, the mortality-rates for Bright's disease vary in different parts of the country, and, as a rule, where they are high for men they are high for women, and conversely where they are low for men they are low for women. It is seen from Table II. and Fig. 1 that if the deaths for the whole country be taken as 100, the deaths in the midlands (an area having a population of nearly one-third of that of the whole country) both for males and females, are represented as 85. London has the highest incidence for males, closely followed by the north, while the figures for females are practically the same in both these areas. It is also clear that, generally speaking, the incidence of Bright's disease is highest in the cities and county boroughs and by far the lowest in the rural districts, where the incidence of puerperal convulsions and albuminuria is highest. Part of the latter contrast may, however, be due to the fact that death certification in country districts is less precise than in towns.

TABLE II

Relative Mortality (Standardised), 1911–1920

BRIGHT'S DISEASE

—	England and Wales.	North.	Midlands.	South.	Wales.	London
Males ..	100	112	85	104	97	121
Females ..	100	116 (121)	85 (85)	97 (70)	104 (197)	115 (55)
COUNTY BOROUGHS						
Males ..	110	123	93	99	108	—
Females ..	107 (97)	122 (109)	91 (79)	87 (85)	98 (148)	—
OTHER URBAN DISTRICTS						
Males ..	99	101	88	98	92	—
Females ..	98 (109)	119 (136)	86 (76)	87 (79)	100 (212)	—
RURAL DISTRICTS						
Males ..	78	76	72	82	95	—
Females ..	83 (118)	89 (145)	76 (103)	81 (83)	109 (197)	—

The death-rates for the whole country are taken as 100. The numbers in parentheses are for puerperal albuminuria and convulsions.

The annual mortality from Bright's disease among females per 1,000,000 living according to their civil state is shown in Table III. It is evident that the differences between the figures for married and single women are very small, and in the age-group 30–35 the mortality-rate is actually higher in single than in married women, as it is in every age-group after 55. This Table includes a certain number of deaths from chronic nephritis associated with the puerperal state, classified to this cause by the operation of the rules for the selection of one from two or more jointly stated causes of death. The total annual number of deaths in females (the average for the ten years) did not exceed 5640. Even if it be conceded that 10 per cent. of the single women gave birth to children, it is clear that the actual annual number of deaths amongst married women between the ages of 15 and 45 did not greatly exceed the calculated number if they had remained single. While it is possible that

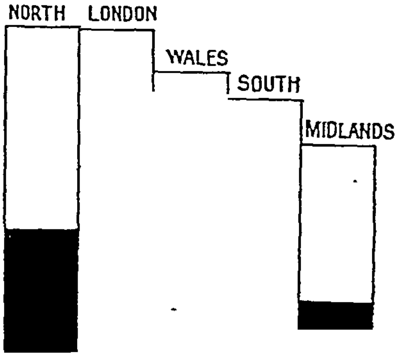

FIG. 1 shows relative mortality (standardised) in women from Bright's disease in different areas. The shaded areas represent (on half the same scale) the relative mortality in the same areas from puerperal albuminuria and convulsions.

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* This figure is arrived at in the following way: 809,622 less 5 per cent. or 40,481 = 769,141 : 4 per cent. of this number = 30,766 = the number who had albuminuria, of which 10 per cent. or 3077 had chronic nephritis. 79/89 × 3077 or 2731 represents the number of previously healthy women who acquired chronic nephritis.

significance. It is true that mortality-rates are used as a measure of nephritis incidence, but if "puerperal nephritis" is merely a disability that does not end in death from renal or associated causes, it differs from any other form of nephritis and should be called by a different name.

It can be confidently asserted that the risks of marriage and childbirth are less than those of being a spinster at any age after 30 years, and it would be difficult to maintain that the selection accorded by marriage has much causal relation to this fact. So far as Bright's disease is concerned it causes a considerably higher mortality-rate in single than in married women after the age of 55 years, when the greater number of deaths occurs. Indeed, the marked association of the mortality from this disease with advanced age supports the hypothesis that the associated kidney lesions are more often degenerative than *inflammatory*.

In Table VII. are shown the standardised rates for chronic nephritis alone in each year from 1921 to 1930 for females. Although the sudden rise from 1926 to 1928 may be accounted for by the introduction of a new form of death certificate in July, 1927, there is at any rate no suggestion, either that the marked fall in the birth-rate,‡ or the recent growth of antenatal clinics has been accompanied by any lessening of the mortality from chronic nephritis in women.

TABLE VII

The Standardised Death-rates, per 1,000,000 *Living, for Bright's Disease among Females,* 1921–1930. (*Chronic Nephritis only.*†)

1921	197	1926	195
1922	208	1927	213
1923	205	1928	230
1924	195	1929	237
1925	200	1930	234

It is, however, necessary to refute the increasingly expansive and almost competitive estimates of the frequency with which chronic nephritis is caused by the so-called toxæmias of pregnancy, both because such views will cause unnecessary anxiety and will inevitably lead to an increase in the number of abortions, and because they will tend to obscure the ætiology both of the "toxæmias of pregnancy" and of Bright's disease.

In conclusion I wish to thank Dr. Percy Stocks, of University College, reader in medical statistics in the University of London, for valuable suggestions embodied in this paper.

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† Table I. includes acute and chronic nephritis under the heading of Bright's disease, whereas Table VII. excludes acute nephritis. Using the same grouping as in Table VII., the standardised figures for 1911–20 would be (according to Reg.-Gen.'s Stat. Review, 1926, p. 99) males 316, females 246.

‡ The average annual number of live births in England and Wales during the decade 1921–30 was 712,907. On the above estimates some 300 less women should have contracted nephritis annually as the result of pregnancy than in the previous decade. Further, in the second half of the decade the average annual number of live births fell to 660,297, so that from 1926 onwards the annual number of women who contracted nephritis as the result of pregnancy should have dropped by over 500 from the calculated figure for the decade 1911–20.

THE GRASS-POLLEN ANTIGEN FOR HAY-FEVER DESENSITISATION

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II.*—DOSAGE

IN discussing the valency of pollen antigens for hay-fever it was cited that really heavy dosing with any grass-pollen would cause the dwindling and disappearance of the diagnostic skin reactions. It was further stated that, when these skin reactions could no longer be produced in a patient, he also lost all trace of his usual hay-fever symptoms at the midsummer hay-fever season.

To take an extreme example: when dealing with an exigent case last year, egged on by the patient, I gradually worked up to a dose of 100,000 units of pollen vaccine—that one final dose representing as much of the yellow pollen grains as will handsomely cover one side of a sixpenny-bit. He got his cure, which was duly signalled by the abolition of his skin reactions; but few patients would go to that degree of trouble—and I may add that with such heroic doses there would hardly be enough pollen extract for all cases.

I wish to show first how this heavy desensitisation can best be carried out; we can then take a side glance at the question of gauging the minimum of such treatment which will give adequate relief—or which will be thought worth while by the average case.

THE COURSE OF TREATMENT

Preliminary cutaneo-reactions.—As with all desensitisation work (whether for grass-pollen, for horse-dandruff, for food-proteins, &c.), we need cutaneo-reactions both to clinch diagnosis and to assess the initial inoculation; but, if diminution or obliteration of the skin reaction is to serve as any test or guarantee of success, we need a reaction base-line to start from.

Any skin or eye reaction that is familiar to the inoculator will serve. I am now using a prick (the minimum prick into the skin of the patient that can be felt as a *distinct* prick) made with a sharp clean needle through neighbouring drops of (1) saline, (2) 5000 units grass-pollen extract, and (3) 50,000 units respectively. The weals (which develop in seven to twelve minutes) can conveniently be traced on to a glass microscope slide the surface of which has been prepared with white-of-egg to take the ink without running. The weals vary from the size of a split pea or less to the size of a shilling or over (see Figure). They are often very irregular in outline with long "pseudopodia." The surrounding erythema is also very characteristic of sensitisation and disappears with treatment, but the rash differs very much on different patients' skins, and is sometimes absent or doubtful even with a well-marked weal; if traced for reference it will of course need a larger piece of glass—say a lantern-slide at the least.

Initial doses.—To save time the initial dose is naturally the highest that can be given without undue reaction in the patient. This must be gauged from the diagnostic weal, from the patient's story of hay-fever symptoms, and from any inoculation treatment in previous years. Initial doses range perhaps from 20 to 100 units, but I have not hesitated to start with as much as 200 units on occasion, and with much more than that for cases that have been inoculated previously. If the inoculator is nervous of constitutional reaction, a small quantity of adrenaline mixed with the pollen extract in the syringe serves as a safeguard.

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* Part I. on Polyvalency appeared in our last week's issue.

Increase of dose by 15 per cent.—Each dose prepares the patient for a larger one to follow, the optimum being the largest that can be taken with comfort. If the initial dose has been under 100 units then it is usual to increase by 20 units at a time up to 200 units, and then to settle down to a 15 per cent. rise at each reinoculation. Thus 200 units would be followed by 230, then 264, 300, 345, 400, 460, 530, &c., right up to say 20,000 units or to a point at which we guess the patient has had enough treatment. If the patient is less sensitive and the initial dose has been 100 or over, then the successive increases on this may be proportionately bolder till the routine 15 per cent. increase is adopted at a dose of 300 or 400 units. The occurrence of reactions after any dose may slow down this increase from time to time, and the absence of any reaction may prompt a bolder increase of dose—say up to 20 per cent.; but it is found that the 15 per cent. rule is convenient in the long run.

Reactions from doses.—If an inoculation is too large the patient may show symptoms such as nettle-rash (either locally, generally, or as angioneurotic œdema), migraine headaches, perhaps asthma, or any of the toxic idiopathies; but unless the dose has been badly over-estimated there will be nothing but a little transient urticaria, which is easily controlled by doses of adrenaline. Even a small urticarial reaction should prompt the inoculator to be cautious for the future, perhaps to repeat the same dose again before increasing, or even, if the reaction was very severe, to go back to a smaller dose.

The sticking-point.—Often, with a stereotyped set of doses as given above, one can completely desensitise a patient without any reaction at all; but sometimes in the course of treatment a "sticking-point" is reached where the patient will not tolerate the usual rate of increase, which has therefore to be slowed down, or possibly even stopped entirely for a dose or two, after which the patient will probably tolerate the inoculations just as readily as previously. As these sticking-points may occur at any place in the gradual ascent of doses, and are in fact just as likely to occur (let us say) at the 200 unit dose as at the 20,000 unit dose, it seems probable that the temporary difficulty lies in the inoculated person; there is, one must suppose, some temporary derangement of metabolism which makes the desensitisation process difficult at that particular time.

Frequency of reinoculation.—The intervals between the doses can be adapted to suit the circumstances of the case within fairly wide limits—e.g., they are preferably not longer than a week nor shorter than four hours. Doses are conveniently given once a day to get through the bulk of the work, but this interval can be stretched out or contracted as convenient. If the inoculation is taking place more rapidly than three times daily it probably saves time to put the patient in a nursing-home or similar institution, and give a regular "rush" course of inoculation.[1]

Number of doses.—It will be readily calculated that if we allow six inoculations for reaching the 200 unit dose, granted there is no hitch, we shall need 19 inoculations to reach the 1000 units, 30 inoculations to reach the 5000 units, 35 inoculations to reach the 10,000 units, and so on. A formidable amount of treatment.

SELF-INOCULATION

For the past three summers for heavy immunisation I have been teaching the more intelligent and busy patients to inoculate themselves, otherwise it is often impracticable to get them completely protected. The actual technique for inoculation is easy enough to teach to almost anyone, but the calculation and measuring out of a string of suitable doses is sometimes more than the patient can compass; thus the student type is suitably repaid for its greater intelligence and capacity. Besides being taught what to do, they must be instructed to keep careful records of dates, doses, and any reactions that may occur. If the doctor in charge frequently reviews their "home work," as shown in these reports, he will soon see if patients are fit to inoculate themselves.

AMELIORATION OR CURE?

How much of this is practicable as a routine?—The extent of treatment very much depends upon the temperament, determination, and circumstances of the patient. We have the paradox that it is more easy to give satisfaction to the serious cases than to the slight ones; and the patient who demands treatment just because his nose occasionally tickles is very difficult to cure—or convince that he is cured.

Patients differ very much in the amount of improvement they will get from small amounts of treatment. Probably treatment up to 500 units, or even only up to 300 units, will give noticeable amelioration in some cases, and will give what they claim to be a "cure" to a few. There will be increasing amelioration as the dose gets larger. Where the severity of the symptoms really justifies such a course I shall try to get my patients this year up to 10,000 units, with higher desensitisation for special cases—unless the diminishing skin reactions justify the reduction of treatment.

Cutaneo-reactions as a guide to successful desensitisation.—The skin reactions will usually be diminishing at about the 2000 to the 5000 unit dose, and may begin to go much sooner than this; there seem to be great differences between patients here. Reactions will probably disappear between the 5000 and the 20,000 dose; more rarely, however, the reactions do not completely go until a dose of 50,000 or even 100,000 has been given. So far as is known, complete obliteration of the reactions guarantees a complete cure from hay-fever symptoms—for that season at any rate. It seems to be the rule that a patient is noticeably desensitised when the skin reactions begin to wilt under treatment, and this may happen long before they vanish completely. Unless special guarantee of a cure is demanded I would suggest that treatment might be concluded or merely "maintained" when the skin reactions have been noticeably lessened. Even this does not necessarily give sure guidance to the minimum of treatment which will be deemed adequate by the patient; many cases report complete or almost complete relief with very few doses, and, it must be presumed, with little or no diminution of the wealing of the skin; but as these people do not come for subsequent skin testing it is peculiarly difficult to give statistics. I propose to devote this year's cases to investigating that one point.

The bogy of artificial sensitisation.—Frequently in the past, writers have speculated on the dangers of sensitisation following inoculation treatment. Arguing, as I think wrongly, by analogy from anaphylaxy, it has been suggested or even stated that though inoculations may make a man better for that season perhaps, his last state will be the worse for it because he may subsequently become more sensitive. The facts seem to be dead against this theory. Patients are not more sensitive in subsequent years but very much less so, and we have now had over 20 years of experience of this. Also inoculation treatment, in addition to being less necessary, is subsequently much easier: not only the initial doses but also the subsequent increases can be bolder—much bigger with impunity. Thus the patient needs less and less treatment in succeeding years; this is true over a long period of years with the smaller doses which were previously given, and it is more conspicuously true with the heavy desensitisations I have given in recent years. *In fact, judging by the skin reactions, very heavy desensitisations may render unnecessary* any treatment in the next spring at any rate. For example, if E. F. (see Figure) does not show increasing reactions by the beginning of May she will be advised to go without treatment this year.

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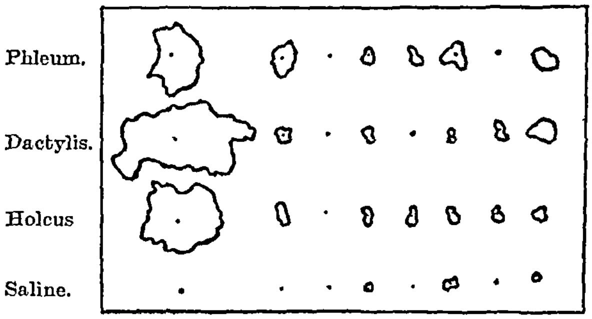
[1] THE LANCET, 1930, i., 744.



E. F. commenced her treatment with 40 units of dactylis pollen on May 3rd (reactions in first column); by May 25th she had reached a 20,000 unit dose of dactylis and her skin reactions (second column) had almost gone. On July 8th, with 50,000 units of dactylis, the reactions had quite disappeared (third column). Treatment was then stopped. The next four columns show the reactions only slightly returning on successive dates in July, September, November, and December, 1932, while the last column was traced on March 14th, 1933. Five other pollens to which she equally lost her reactions have been omitted from this diagram to save space.

Lastly, I may quote the experience of a normal—i.e., non-hay-fever—subject. For experimental purposes—e.g., when demonstrating a Prausnitz reaction —I have frequently injected into myself either subcutaneously or intravenously doses of pollen extract from a minute dose up to 30,000 units, and I can detect no subsequent sensitisation in myself when tested by cutaneo-reactions, or when injecting the next massive dose, or from the atmospheric pollen cloud at midsummer. I have remained normal, and so have my colleagues who have suffered similar treatment. Yet there must be some slight trace of true anaphylaxy from pollen—even in man one must suppose; and it can be readily demonstrated in the guinea-pig which does not experience any trace of true hay-fever so far as we can find out. Therefore in this respect, as in several others, anaphylaxy and hay-fever are in different categories. In practice there is no danger of artificial sensitisation.

CONCLUSION

(1) The practitioner may justifiably tell his hay-fever patient that he *can* be cured for certain; but should add in the next breath that unless symptoms are really exceptionally severe such complete treatment may be hardly worth while. Far less treatment than this usually gives satisfactory or even complete relief, but it is impossible at present to guarantee how much less will do sufficiently well. (2) Some, but at present not enough, evidence as to the successful progress of the desensitisation can be gained from the diminishing skin reactions. (3) There is apparently no danger that the patient may have to pay for present desensitisation by subsequent increased sensitisation.

THE NUTRITION OF THE HEART
IN RELATION TO THE ELECTROCARDIOGRAM AND ANGINAL PAIN

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ASSISTANT PHYSICIAN AND PHYSICIAN IN CHARGE OF THE CARDIOGRAPHIC DEPARTMENT, CHARING CROSS HOSPITAL; PHYSICIAN TO OUT-PATIENTS, CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS

IT is the purpose of this paper to consider the influence of some nutritional disorders on the heart and the electrocardiogram. The results of an electrocardiographic study of anæmia will be recorded and assessed in the light of the findings I have already published [1] concerning the diabetic heart. It is further intended here to elucidate the principles underlying abnormalities of nutritional type in the electrocardiogram, and to consider how these influence our conceptions of the production of anginal pain.

The problems of general malnutrition of the heart have hitherto received relatively little attention. Advances in cardiological knowledge during the past twenty years have been concerned mainly with the pathology of coronary artery disease and consequent focal myocardial damage, and with the clinical and electrocardiographic counterparts of these morbid processes. Such researches *have yielded results of so great importance that they mark an outstanding epoch in the develop*ment of cardiological knowledge. But the mechanism of coronary blood-supply and the myocardial lesions due to coronary obstruction constitute only one aspect of the picture. Abnormalities of the irrigating blood in its content of nutritional substances—oxygen, internal secretions, and vitamins—must exert an immense influence, the nature and extent of which still remain problematic. It is true that certain outstanding contributions have already been made to our knowledge of the operation of these factors. The work of Wenckebach [2] on beri-beri heart, and the more recent researches of Harris [3] and others on the arterial changes in experimental hypervitaminosis D, have demonstrated the important influence exerted upon the cardiovascular system by accessory food factors. The control of the heart and circulation by the hormones of the thyroid, adrenal, and pancreas, and the *relation of these regulating* agents to the vitamins and the nutrition of the heart presents a vast field of research hitherto relatively unexplored.

It was believed in the early days of electrocardiography that for any given subject free from cardiovascular disease the electrocardiogram was constant. While it is now generally appreciated that this is not so, the fact that rapid and gross changes occur in various circumstances in such individuals is not sufficiently recognised. The conditions in which such electrocardiographic abnormalities supervene are, in general, those associated with disturbances of nutrition or with the development of toxæmia. It has long been observed that in such conditions as uræmia and pneumonia, alterations that might simulate those of cardiac infarction could be seen in the electrocardiogram. Again, to take a nutritional example, it has been shown by McCullough [4] that gross changes in the electrocardiogram occur in the course of malnutrition in infants. Electrocardiographic anomalies belonging to these categories involve, essentially, the T-deflection and the S–T or R–T interval.

Much obscurity still surrounds many of the problems of cardiac nutrition. It has been known for years that glucose administration is sometimes valuable in the treatment of heart disease. Certain observers have recorded the beneficial effects of oral and intravenous administration,[5-7] while Lasch [8] and others have reported negative results. The experiments of MacLean and de Wesselow [9] and Foster [10] have shown that hyperglycæmia following ingestion or injection of glucose may be succeeded by hypoglycæmia, and that repeated doses may produce even more paradoxical results. It may be that these processes underlie the conflicting reports on the value of glucose in the treatment of heart disease and failure. In the sphere of electrocardiography the mechanism of T-wave production is still imperfectly understood. Conditions of local myocardial ischæmia are known to produce certain modifications in the R–T or S–T intervals, and in the T-waves. It has been established that coronary lesions, if they affect the electrocardiogram, produce opposite results in leads I. and III. Thus R–T elevation in lead I. is accompanied by corresponding depression in lead III. if there is any change at all in this lead. The same principle holds, in general, for inversion of the T-wave from a coronary cause. On the other hand, electrocardiographic changes due to parenchymatous damage from toxæmia or nutritional disturbances have sometimes passed unrecognised or have been misunderstood.

NORMAL GLYCOGEN METABOLISM IN THE HEART

Before considering the metabolic basis of malnutrition in the heart, it is necessary to recapitulate briefly present-day knowledge of normal metabolism in the heart. It must be remembered that modern conceptions of these processes are derived very largely by inference from animal experimentation, and from the knowledge that has been gained of skeletal muscle through the work of Fletcher and Hopkins [11] and Hill [12] and others.

It is generally believed that the heart obtains a large part of its energy from the combustion of glycogen. This substance is present in the heart muscle in amounts inversely proportional to its utilisation, as has been shown by Cruickshank and Patterson.[13] The energy of cardiac contractions is provided largely by the breakdown of glycogen into sugar, and sugar into lactic acid. It is believed that about one-fifth of such lactic acid is oxidised to form carbonic acid and water, while the remaining four-fifths are reconverted to glycogen. It is obvious that under all conditions of rest and exercise a balance must eventually be struck between lactic acid formation and disposal. This implies continuous fresh supplies of glycogen, presumably mobilised from the body, and sufficient oxygen to combust a fraction of the lactic acid produced in the course of cardiac contractions. As in every sphere of carbohydrate utilisation, these processes must be under the control of insulin. Hepburn and Latchford [14] have shown that in the isolated perfused heart of the rabbit, addition of insulin to the perfusate produces threefold increase in the glycogen utilisation. Further, it has been demonstrated [13] that glycogen utilisation in the human diabetic heart is only one-half that of the normal heart. It seems probable that insulin also promotes the reconversion of lactic acid into glycogen.

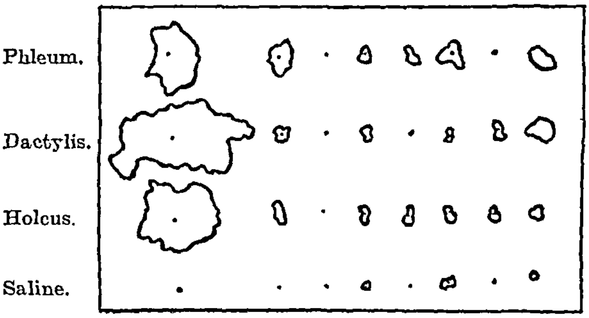
While it has been held in the past that the presence of lactic acid was necessary for the contraction of muscle to take place, it has been proved by Lundsgaard [15] that this is not so, and that muscular contractions may occur in the absence of lactic acid. Lundsgaard's researches were based upon the use of the substance mon-iod-acetic acid which inhibits the production of lactic acid in muscle. The use of this substance has been extended to a study of the mammalian electrocardiogram by Siegel,[16] who has shown that if the production of lactic acid in the heart is inhibited by the use of mon-iod-acetic acid, the T-wave disappears from the electrocardiogram.

THE ELECTROCARDIOGRAM IN DERANGEMENTS OF GLYCOGEN METABOLISM

In a previous publication [1] I have recorded, in collaboration with R. A. Hickling, the results of an electrocardiographic study of the heart in diabetes. Gross abnormalities were observed, ranging from slight depression of the T-waves in lead II. or III. to inversion of the T-waves in all leads. These changes always disappeared in the course of treatment. Reasons were given for believing these electrical phenomena to be due to parenchymatous myocardial damage consequent upon defective nutrition of the heart muscle. Studies by Taterka [17] of patients in diabetic coma yielded corresponding results. Support for the view that nutritional deficiency underlies these electrocardiographic abnormalities is gained from a consideration of the hypoglycæmic state. In this condition also there is a deficiency in the utilisation of glycogen, not, as in hyperglycæmia, because the tissues are unable to use their supplies, but because supplies are not forthcoming. It has been shown by Stepp and Parade,[18] Weichmann,[19] and Middleton and Oatway [20] that depression of the T-waves is commonly found in hypoglycæmia.

It is convenient here to mention some other phases of glycogen metabolism which bear upon this question. Examples of conditions in which enhanced glycogen-utilisation occurs in the body are: (1) exercise, (2) thyrotoxicosis, and (3) excitation of the sympathetic by administration of adrenaline. All of these conditions are found to be associated with well-developed T-waves in the electrocardiogram. It has been shown by Müller and Nicolai,[21] and it is generally agreed, that exercise increases the amplitude of the T-waves. It is still debated how far thyrotoxicosis produces any specific effect upon the electrocardiogram, but White and Aub [22] found a very limited parallelism between the basal metabolic rate and the amplitude of the T-wave in thyroid disease. Siegel [16] states that very steep and high T-waves occur with great regularity in hyperthyroidism. The increased amplitude of the T-wave produced by adrenaline administration has been frequently demonstrated.[23 18]

Reverting to the carbohydrate metabolism of the normal heart already discussed, it is clear that enhanced utilisation of glycogen implies rapid formation of lactic acid, and it has been seen that in such circumstances T-waves of increased amplitude are found. Conversely, both in diabetes and hypoglycæmia, the defective utilisation of glycogen must result in a slowing of the rate of lactic acid formation, while flattened or inverted T-waves are the electrical counterparts of these states. Mention might also be made here of the myocardial disturbances in myxœdema and cretinism, demonstrated by Thacher has been suggested or even stated that though inoculations may make a man better for that season perhaps, his last state will be the worse for it because he may subsequently become more sensitive. The facts seem to be dead against this theory. Patients are not more sensitive in subsequent years but very much less so, and we have now had over 20 years of experience of this. Also inoculation treatment, in addition to being less necessary, is subsequently much easier: not only the initial doses but also the subsequent increases can be bolder—much bigger with impunity. Thus the patient needs less and less treatment in succeeding years; this is true over a long period of years with the smaller doses which were previously given, and it is more conspicuously true with the heavy desensitisations I have given in recent years. In fact, judging by the skin reactions, *very* heavy desensitisations may render unnecessary any treatment in the next spring at any rate. For example, if E. F. (see Figure) does not show increasing reactions by the beginning of May she will be advised to go without treatment this year.



E. F. commenced her treatment with 40 units of dactylis pollen on May 3rd (reactions in first column); by May 25th she had reached a *20,000 unit dose of dactylis and her skin reactions* (second column) had almost gone. On July 8th, with 50,000 units of dactylis, the reactions had quite disappeared (third column). Treatment was then stopped. The next four columns show the reactions only slightly returning on successive dates in July, September, November, and December, 1932, while the last column was traced on March 14th, 1933. Five other pollens to which she equally lost her reactions have been omitted from this diagram to save space.

Lastly, I may quote the experience of a normal—i.e., non-hay-fever—subject. For experimental purposes—e.g., when demonstrating a Prausnitz reaction—I have frequently injected into myself either subcutaneously or intravenously doses of pollen extract from a minute dose up to 30,000 units, and I can detect no subsequent sensitisation in myself when tested by cutaneo-reactions, or when injecting the next massive dose, or from the atmospheric pollen cloud at midsummer. I have remained normal, and so have my colleagues who have suffered similar treatment. Yet there must be some slight trace of true anaphylaxy from pollen—even in man one must suppose; and it can be readily demonstrated in the guinea-pig which does not experience any trace of true hay-fever so far as we can find out. Therefore in this respect, as in several others, anaphylaxy and hay-fever are in different categories. In practice there is no danger of artificial sensitisation.

CONCLUSION

(1) The practitioner may justifiably tell his hay-fever patient that he *can* be cured for certain; but should add in the next breath that unless symptoms are really exceptionally severe such complete treatment may be hardly worth while. Far less treatment than this usually gives satisfactory or even complete relief, but it is impossible at present to guarantee how much less will do sufficiently well. (2) Some, but at present not enough, evidence as to the successful progress of the desensitisation can be gained from the diminishing skin reactions. (3) There is apparently no danger that the patient may have to pay for present desensitisation by subsequent increased sensitisation.

THE NUTRITION OF THE HEART
IN RELATION TO THE ELECTROCARDIOGRAM AND ANGINAL PAIN

By K. Shirley Smith, M.D., B.Sc., M.R.C.P. Lond.
ASSISTANT PHYSICIAN AND PHYSICIAN IN CHARGE OF THE CARDIOGRAPHIC DEPARTMENT, CHARING CROSS HOSPITAL; PHYSICIAN TO OUT-PATIENTS, CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS

It is the purpose of this paper to consider the influence of some nutritional disorders on the heart and the electrocardiogram. The results of an electrocardiographic study of anæmia will be recorded and assessed in the light of the findings I have already published[1] concerning the diabetic heart. It is further intended here to elucidate the principles underlying abnormalities of nutritional type in the electrocardiogram, and to consider how these influence our conceptions of the production of anginal pain.

The problems of general malnutrition of the heart have hitherto received relatively little attention. Advances in cardiological knowledge during the past twenty years have been concerned mainly with the pathology of coronary artery disease and consequent focal myocardial damage, and with the clinical and electrocardiographic counterparts of these morbid processes. Such researches have yielded results of so great importance that they mark an outstanding epoch in the development of cardiological knowledge. But the mechanism of coronary blood-supply and the myocardial lesions due to coronary obstruction constitute only one aspect of the picture. Abnormalities of the irrigating blood in its content of nutritional substances—oxygen, internal secretions, and vitamins—must exert an immense influence, the nature and extent of which still remain problematic. It is true that certain outstanding contributions have already been made to our knowledge of the operation of these factors. The work of Wenckebach[2] on beri-beri heart, and the more recent researches of Harris[3] and others on the arterial changes in experimental hypervitaminosis D, have demonstrated the important influence exerted upon the cardiovascular system by accessory food factors. The control of the heart and circulation by the hormones of the thyroid, adrenal, and pancreas, and the relation of these regulating agents to the vitamins and the nutrition of the heart presents a vast field of research hitherto relatively unexplored.

It was believed in the early days of electrocardiography that for any given subject free from cardiovascular disease the electrocardiogram was constant. While it is now generally appreciated that this is not so, the fact that rapid and gross changes occur in various circumstances in such individuals is not sufficiently recognised. The conditions in which such electrocardiographic abnormalities supervene are, in general, those associated with disturbances of nutrition or with the development of toxæmia. It has long been observed that in such conditions as uræmia and pneumonia, alterations that might simulate those of cardiac infarction could be seen in the electrocardiogram. Again, to take a nutritional example, it has been shown by McCullough[4] that gross changes in the electrocardiogram occur in the course of malnutrition in infants. Electrocardiographic anomalies belonging to these categories involve, essentially, the T-deflection and the S–T or R–T interval.

Much obscurity still surrounds many of the problems of cardiac nutrition. It has been known for years that glucose administration is sometimes valuable in the treatment of heart disease. Certain observers have recorded the beneficial effects of oral and intravenous administration,[5–7] while Lasch[8] and others have reported negative results. The experiments of MacLean and de Wesselow[9] and Foster[10] have shown that hyperglycæmia following ingestion or injection of glucose may be succeeded by hypoglycæmia, and that repeated doses may produce even more paradoxical results. It may be that these processes underlie the conflicting reports on the value of glucose in the treatment of heart disease and failure. In the sphere of electrocardiography the mechanism of T-wave production is still imperfectly understood. Conditions of local myocardial ischæmia are known to produce certain modifications in the R–T or S–T intervals, and in the T-waves. It has been established that coronary lesions, if they affect the electrocardiogram, produce opposite results in leads I. and III. Thus R–T elevation in lead I. is accompanied by corresponding depression in lead III. if there is any change at all in this lead. The same principle holds, in general, for inversion of the T-wave from a coronary cause. On the other hand, electrocardiographic changes due to parenchymatous damage from toxæmia or nutritional disturbances have sometimes passed unrecognised or have been misunderstood.

NORMAL GLYCOGEN METABOLISM IN THE HEART

Before considering the metabolic basis of malnutrition in the heart, it is necessary to recapitulate briefly present-day knowledge of normal metabolism in the heart. It must be remembered that modern conceptions of these processes are derived very largely by inference from animal experimentation, and from the knowledge that has been gained of skeletal muscle through the work of Fletcher and Hopkins[11] and Hill[12] and others.

It is generally believed that the heart obtains a large part of its energy from the combustion of glycogen. This substance is present in the heart muscle in amounts inversely proportional to its utilisation, as has been shown by Cruickshank and Patterson.[13] The energy of cardiac contractions is provided largely by the breakdown of glycogen into sugar, and sugar into lactic acid. It is believed that about one-fifth of such lactic acid is oxidised to form carbonic acid and water, while the remaining four-fifths are reconverted to glycogen. It is obvious that under all conditions of rest and exercise a balance must eventually be struck between lactic acid formation and disposal. This implies continuous fresh supplies of glycogen, presumably mobilised from the body, and sufficient oxygen to combust a fraction of the lactic acid produced in the course of cardiac contractions. As in every sphere of carbohydrate utilisation, these processes must be under the control of insulin. Hepburn and Latchford[14] have shown that in the isolated perfused heart of the rabbit, addition of insulin to the perfusate produces threefold increase in the glycogen utilisation. Further, it has been demonstrated[13] that glycogen utilisation in the human diabetic heart is only one-half that of the normal heart. It seems probable that insulin also promotes the reconversion of lactic acid into glycogen.

While it has been held in the past that the presence of lactic acid was necessary for the contraction of muscle to take place, it has been proved by Lundsgaard[15] that this is not so, and that muscular contractions may occur in the absence of lactic acid. Lundsgaard's researches were based upon the use of the substance mon-iod-acetic acid which inhibits the production of lactic acid in muscle. The use of this substance has been extended to a study of the mammalian electrocardiogram by Siegel,[16] who has shown that if the production of lactic acid in the heart is inhibited by the use of mon-iod-acetic acid, the T-wave disappears from the electrocardiogram.

THE ELECTROCARDIOGRAM IN DERANGEMENTS OF GLYCOGEN METABOLISM

In a previous publication[1] I have recorded, in collaboration with R. A. Hickling, the results of an electrocardiographic study of the heart in diabetes. Gross abnormalities were observed, ranging from slight depression of the T-waves in lead II. or III. to inversion of the T-waves in all leads. These changes always disappeared in the course of treatment. Reasons were given for believing these electrical phenomena to be due to parenchymatous myocardial damage consequent upon defective nutrition of the heart muscle. Studies by Taterka[17] of patients in diabetic coma yielded corresponding results. Support for the view that nutritional deficiency underlies these electrocardiographic abnormalities is gained from a consideration of the hypoglycæmic state. In this condition also there is a deficiency in the utilisation of glycogen, not, as in hyperglycæmia, because the tissues are unable to use their supplies, but because supplies are not forthcoming. It has been shown by Stepp and Parade,[18] Weichmann,[19] and Middleton and Oatway[20] that depression of the T-waves is commonly found in hypoglycæmia.

It is convenient here to mention some other phases of glycogen metabolism which bear upon this question. Examples of conditions in which enhanced glycogen-utilisation occurs in the body are: (1) exercise, (2) thyrotoxicosis, and (3) excitation of the sympathetic by administration of adrenaline. All of these conditions are found to be associated with well-developed T-waves in the electrocardiogram. It has been shown by Müller and Nicolai,[21] and it is generally agreed, that exercise increases the amplitude of the T-waves. It is still debated how far thyrotoxicosis produces any specific effect upon the electrocardiogram, but White and Aub[22] found a very limited parallelism between the basal metabolic rate and the amplitude of the T-wave in thyroid disease. Siegel[16] states that very steep and high T-waves occur with great regularity in hyperthyroidism. The increased amplitude of the T-wave produced by adrenaline administration has been frequently demonstrated.[23 18]

Reverting to the carbohydrate metabolism of the normal heart already discussed, it is clear that enhanced utilisation of glycogen implies rapid formation of lactic acid, and it has been seen that in such circumstances T-waves of increased amplitude are found. Conversely, both in diabetes and hypoglycæmia, the defective utilisation *of glycogen* must result in a slowing of the rate of lactic acid formation, while flattened or inverted T-waves are the electrical counterparts of these states. Mention might also be made here of the myocardial disturbances in myxœdema and cretinism, demonstrated by Thacher of defective glycogen metabolism. Although coronary lesions not infrequently complicate the states of hyperglycæmia and hypoglycæmia, there appears to be no doubt that pure metabolic derangements of this type may induce anginal pain.

To my medical colleagues of the staff of Charing Cross Hospital, who have allowed me to investigate patients under their care, and specially to Dr. Hickling, who has given also valuable criticism, I tender my thanks. Towards the expenses of this research a grant was made by the British Medical Association.

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Clinical and Laboratory Notes

AIR EMBOLISM DURING ARTIFICIAL PNEUMOTHORAX INSUFFLATION

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THE following case is of interest in view of the fairly definite nature of the accident, the dramatic sequence of clinical symptoms, and the rapid and uneventful recovery.

A man, aged 20 years, was admitted to the Cheshire Joint Sanatorium on Dec 12th, 1932, with a history of recent onset of morning cough and sputum. He had had one slight hæmoptysis and some loss of weight. The sputum contained tubercle bacilli, and physical and radiological examination showed an active exudative lesion of upper half of right lung, with an appearance of recent cavity in right infra-clavicular area and some lesser deposits at the left apex

Right artificial pneumothorax was performed on Jan 11th, 1933, and successive refills were :—

Date.	Manometer readings—		Amount of air given.
	Initial.	Final.	
Jan. 11th, 1933	− 7 −5	+1 +14	300 c cm.
,, 12th, ,,	−11 −5	+5 +11	300 ,,
,, 14th, ,,	− 5 −2	+1 +14	350 ,,
,, 17th, ,,	− 8 −3	−2 + 6	300 ,,
,, 21st, ,,	−10 −5	−3 + 1	300 ,,

The readings, though not very satisfactory, appeared to show the possibility of an increasingly efficient collapse.

On Jan. 26th fluoroscopy showed a narrow vertical collapse of the lower two-thirds of the right lung with flattening of the diaphragm. Three attempts at pleural puncture gave equivocal manometer readings, and the case was referred to Dr. Peter W. Edwards, the medical superintendent, who made a final attempt. A free manometer swing (about −3 + 2) was found, and a small experimental insufflation was attempted. Within a few moments the patient became extremely restless, and the needle was at once withdrawn The patient's colour then became poor and the expression anxious, followed quickly by partial loss of consciousness, convulsive movements, clonic spasms of limbs, and conjugate deviation of eyes to the right. There was no loss of sphincter control, and no respiratory signs.

A few moments' later multiple circular areas of blanching, with bright circumferential injection, each 1 in. to 2 in in diameter, were noticed over two areas of skin—(1) the radial aspect of the right forearm from elbow to fingers, and (2) the submammary region of the right chest wall

Consciousness was quickly regained and speech recovered, the conjugate deviation persisting somewhat longer. There was then noted definite laxity of the left arm and left leg with loss of voluntary movement, exaggeration of deep reflexes on affected side, and ankle-clonus with extensor plantar response. The skin areas quickly changed to an ashy grey colour with surrounding dusky injection, and finally to a diffuse dusky marbling. The paretic signs passed off within about 20 minutes, and the plantar response became flexor. The skin marbling persisted for about an hour, and there was some residual pallor, general weakness, and diffuse headache, passing off within 24 hours.

This case was clearly one of multiple air emboli affecting the terminal distribution of the right internal carotid, right brachial, and (probably) right internal mammary arteries. The left hemiparesis indicated interruption of conduction probably in the region of the internal capsule, and the irritative symptoms probably showed some additional cortical distribution of air. The amount of air passing from the pulmonary venous system to the systematic circulation must have been several cubic centimetres, and its distribution being confined to the terminal circulation of the innominate artery had a clear physical explanation through the patient being in the left lateral position for insufflation. The entry of the air into the pulmonary venous system despite the manometer swing, which must have been alveolar, was probably due to the positive water pressure of the apparatus causing air to enter an injured vein from the alveoli. The happy termination of the accident indicated non-involvement of the blood-supply of the vital centres of the medulla, and the *rapid subsidence of* symptoms showed the quick absorption of the embolic air by the circulation—presumably more rapid in the freer cerebral circulation than the skin—while the rapidity of progress demonstrated the uselessness of any active treatment.

Cases of air embolism both cerebral and cutaneous are freely described in the literature of pneumothorax therapy, but this case is of considerable interest in the combination of symptoms. This case was the first suggestion of air embolism occurring among a long series of artificial pneumothorax cases in the records of the sanatorium. Such cases are stated to "truly belong to the historical period of pneumothorax therapy"[1] which may account for their non-publication in more recent years.

I have to thank Dr. Edwards for permission to publish the above case.

SPONTANEOUS SUBARACHNOID HÆMORRHAGE

By John A. Page, M.B. Dub.

SENIOR HOUSE SURGEON, GENERAL INFIRMARY, MACCLESFIELD

A MAN, aged 46, was admitted to the Macclesfield General Infirmary on Jan. 2nd, 1933, in a semi-comatose condition suffering from intense occipital headache and nuchal rigidity.

History.—The patient suffered from a "nervous breakdown" nine years ago, characterised by the gradual onset of severe occipital headache. with pain in the back of the neck and general weakness. On this occasion he remained in bed at home for two weeks, recovery was slow, and he did not resume work for two months. Since then he has been subject to attacks of severe bilateral, frontal, and occipital headache, "neuritis of the neck," and vomiting, suggesting a "cerebral" type of migraine.

On Dec. 31st, 1932, whilst working in the garden, he suddenly complained of intense pain in the head, vomited, and collapsed, and remained in an unconscious condition for several hours. The next day he was confined to bed, and was admitted on the following day.

On *admission* he was in a very drowsy condition, with a hand clasped to the forehead, and complained of intense headache. Questions evoked a response only after some delay. Pulse-rate 60, temperature 99° F. There was definite rigidity of the neck muscles, but Kernig's sign was negative, tendon reflexes normal. The pupils were small and gave a transient contraction to light. Fields of vision normal, and no papillœdema or ocular paresis was present. Nothing abnormal was found in the chest or abdomen.

Special investigations.—Urine normal. A lumbar puncture was performed on Jan. 4th, and two specimens were taken, which were uniformly blood-stained, and on centrifugalisation gave a clear yellow supernatant fluid with a heavy deposit of red blood-cells. No other investigations on the fluid were made. Wassermann reaction negative. Blood pressure 150 systolic, 95 diastolic.

Course of illness.—With symptomatic treatment the patient remained in much the same condition for two weeks. The lumbar puncture relieved the symptoms for some hours. Gradual improvement then took place, the ocular symptoms clearing up after some days, the headache became less intense, but the nuchal rigidity persisted. A second lumbar puncture performed on Jan. 18th showed transparent fluid of a brownish-pink colour, containing no coagula, 190 red cells, and 80 leucocytes per c.mm. The supernatant fluid retained its pink colour, and the deposit showed many erythrocytes showing crenation and other evidence of disintegration. Polymorphonuclears and mononuclears were present in equal numbers. Globulin tests were strongly positive. A culture remained sterile.

The patient was discharged free from symptoms on Feb. 4th, 1933.

This case is of interest owing to its close similarity to the case reported by Dr. Maurice E. Shaw in THE LANCET of Jan. 21st (p. 138), where the patient, having improved steadily after a severe hæmorrhage, eventually became suddenly unconscious and died after another hæmorrhage. At the post-mortem examination a ruptured congenital intracranial aneurysm was found in close relation to the circle of Willis. A similar diagnosis can be made with certainty in this case. The "neuritis" of the neck and occipital headache which were present before admission may possibly be explained by leaking of the aneurysm, causing clots about the nerve-roots of the medulla and cervical cord, with an eventual severe hæmorrhage producing coma.

The ocular symptoms suggest irritation of the third cranial nerve, rather than paralysis. The cerebro-spinal fluid taken at the second lumbar puncture showing absence of any undegenerated blood-cells made it clear that the hæmorrhage had ceased, and that complete recovery would ensue if there was no further hæmorrhage.

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MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTIONS OF NEUROLOGY AND PHYSICAL MEDICINE

AT a joint meeting of these sections on March 16th, with Dr. RISIEN RUSSELL, president of the section of neurology, in the chair, a discussion on the causation and treatment of

Interstitial Neuritis

was opened by Dr. WILFRED HARRIS. The term was used, he said, to describe an acute or chronic inflammation of the supporting connective tissue binding together the separate nerve-fibres. The nerve-fibres were liable to be compressed and damaged by such inflammation. Neuritis might have a toxic origin from alcohol or diabetes—in which case both interstitial and parenchymatous nerve degeneration might occur—or it might follow certain fevers, such as paratyphoid, or the more chronic infection of dental sepsis or other distant suppuration. Another group of cases were due to the local spread of neighbouring inflammation, as in tuberculous caries, or the more chronic condition of fibrositis of the shoulder and back muscles, involving the finer nerves and nerve-endings and causing the pains of so-called muscular rheumatism and lumbago. Spread of such a chronic inflammatory process might involve the sheath of the sciatic nerve at the notch, producing sciatica; and fibrositis of the neck muscles might give rise to brachial neuritis by affecting the brachial plexus. A rheumatic or osteo-arthritic process involving the spinal nerves at the intervertebral foramina gave rise to an obstinate form of sciatica with contralateral scoliosis, the trunk being flexed laterally away from the painful side. Osteo-arthritis of the hip-joint might also cause some sciatica by direct spread of a chronic inflammation to the sheath of the nerve, which passed close behind the joint. Chill might be a predisposing factor in neuritis, for example in facial palsy; and direct injury from contusion and bruising might produce the same result.

Treatment differed in the acute and the chronic stages and might be medicinal or physical. Rest was important in the acute stage, and opiates might be necessary to relieve pain. Strychnine and other tonics were valuable in the convalescent stage of acute neuritis when pain and tenderness had disappeared, but arsenic and alcohol should be avoided since both could cause neuritis. Iodine was of value in the chronic conditions, and massage was usually borne before either electrical treatment or strychnine. Antiphlogistine, mud packs, hot saline baths, and radiant heat had a place in treatment, but he had obtained little success with diathermy; liniments alternating with poultices were often useful. In long-standing sciatica the nerve was shrunken and cord-like; longitudinal stretching was useless, except in a few cases, but lateral stretching could be produced whether a connective tissue with lowered metabolism and reduced blood-supply should become the site of calcification.

DISCUSSION

Mr. **Duncan Fitzwilliams** referred with appreciation to the work of D. M. Greig, of Edinburgh, on the subject under discussion and said that the views expressed seemed to be a development of those sketched out by Greig.

The **President** said that it was common to find that patients who had to remain in bed for a long time because of accident had renal calculi; a number of patients with spinal caries had developed calculi. Reference had been made to calcification following injections of lead; he had seen calcification take place following deep X ray therapy, no injections having been given.

Dr. J. F. **Brailsford** said that in cases of injury to the wrist-joint a radiogram taken immediately after the accident sometimes revealed not even slight evidence of a lesion. He had such a case under his care at present; but a month afterwards X rays showed a cyst inside the scaphoid, and a few weeks later still there was evidence of a fracture. In osteochondritis the first phenomenon seen was an increased density of bone; then there was a gradual crumbling and islands of condensation became apparent. If the patient was watched carefully evidence could be detected that areas of new bone were being laid down, of equal density to contiguous bone.

Dr. C. **Thurstan Holland** said that during the war he had seen many cases among severely wounded soldiers of stones in the kidneys due to lack of movement and exercise; but as soon as the men were able to get about again and resume their activities the stones disappeared in a few weeks.

Prof. J. M. **Woodburn Morison** said he had not been studying in Edinburgh many weeks before Greig showed him that his ideas on bone pathology must be revised; one thing on which Greig insisted was that the term myositis ossificans should not be used, and he had also written on the formation of intracranial osteophytes. Prof. Woodburn Morison regretted that in so many quarters the old bone pathology was still being taught.

Dr. W. H. **Coldwell** said a common site of calcification was the pineal gland, and another the costal cartilages; he would like to know the reason for the early disposition of lime salts in costal cartilages, and also why the age-incidence of calcification was so varied in different people. If patients with linear cracks in bone were followed up it would be found that these cracks were later filled with new bone.

Dr. H. B. **Scargill** (Leeds) described his sensations and experiences while suffering from supraspinatus tendinitis. The pain, he said, was like a toothache round the shoulder-joint; the time of greatest intensity was at night, and it was difficult to get the arm into a comfortable posture. Movements of arm and scapula did not seem to influence the pain. At one time he suddenly got agonising pain and the shoulder-joint was more or less locked. When the pain eased somewhat, on the second day, a radiogram was taken, and a shadow was seen just above the head of the humerus. Operation was to have been done to remove what appeared to be a piece of bone, but a bad cold postponed the procedure, absorption took place, and he had no more pain. He attributed the onset to the exertion of daily cranking his car.

Mr. **Watson Jones**, in reply, said there was no more vascular tissue in the body than fibro-cartilage, and the question of age did not necessarily come into the calcification problem. Possibly trauma of the scaphoid could cause traumatic hyperæmia and decalcification with the formation of a cyst, but that he regarded as quite rare. It was common to meet with a fracture of the scaphoid of so slight degree that it was not detected on the first day of the injury. Nowadays many surgeons examined radiograms of the wrist with a lens to detect any cracks before passing a wrist as sound.

HUNTERIAN SOCIETY

A MEETING of this society was held at Simpson's Restaurant, Cheapside, on March 20th, with Dr. **Nathan Raw** in the chair, when a discussion took place on

Practical Dietetics

Prof. S. J. **Cowell** said that a first requirement of one starting to practise dietetics was a knowledge of the composition of normal diet—that is to say, of a diet capable of promoting nutrition. During the last few years the attention of people who had been working on the subject of nutrition had been focused largely on the importance of certain constituents of diet which, 20 years ago, were quite unrecognised. He referred, of course, to the vitamins and also to the mineral salts, the significance of which was only now being appreciated. Eventually it should be possible not only to name the essential components of a diet, but to determine the quantities of all constituents needed under varying conditions.

The next point was to discover in what foods these constituents were present. The constituents of foods varied considerably according to the conditions under which the foods were produced. The nutritive properties of milk varied according to the way in which the cow was fed, of vegetables according to the soil. It was said that the type of manure applied to the soil in which a plant was grown affected its content of vitamin B. It was not always appreciated how varied might be the mineral content of green vegetables. The outermost leaf of the cabbage might contain 30 times as much calcium as the inner part, and four or five times as much calcium even as the leaf next to it.

A third point to be considered was the physiological or pathological effects of excess or deficiency of food factors. It was known that a deficiency in the diet of a particular vitamin led to certain ill-effects, but in the present state of knowledge the signs of each deficiency could not always be distinguished. Probably small degrees of deficiency in vitamins and in mineral salts produced certain symptoms not at present recognised which it would be possible to distinguish in the future. A Swedish investigator had found that in slight deficiencies vitamin C led to a certain weakening of the capillaries, and so caused liability to unusual bleeding under slight stress. The susceptibility to hæmorrhage had been found to vary according to the amount of vitamin C. There was now a tendency, Prof. Cowell continued, to regard some diseases which a few years ago were considered purely deficiency diseases as being more complicated in their origin. Beri-beri used to be definitely ascribed to the eating of polished rice; the tendency now was to regard it as not due purely to a deficiency of one factor, because in many cases a supply of the missing factor did not definitely cure the disease. It had been suggested it might be associated with a combined deficiency of vitamin B_1 and some other food factor, or some constituent in the diet which actually created damage in the absence of the protective antineuritic vitamin. The same argument was gaining ground with regard to pellagra, which a few years ago was regarded as due to a deficiency of vitamin B_2. It could be argued that rickets was not a pure food deficiency disease, for though it would not develop in the presence of an ample supply of vitamin D, it would be quite possible to arrange to keep individuals on the same diet and to allow rickets to develop in one and not in another, because exposure to sunlight or ultra-violet radiation could compensate for the absence of vitamin D in the diet.

Dietetic factors were used for the cure of diseases not in the ordinary way produced as a result of dietetic deficiency, as for example liver in pernicious anæmia. Dr. Cramer had shown that a definite nephritis could be produced in animals if the diet was constructed in such a way that it contained a smaller quantity of magnesia than normal. In the treatment of bone diseases there was scope for the application of modern principles of dietetics, and an enormous field lay open to the pædiatrician in this respect. The growing child was particularly sensitive to deficiencies in his diet. In this country probably the elements most likely to be lacking in the diets of infants and young children were vitamins A, which played an important part in the normal development of tissues, and vitamin D. Mrs. May Mellanby had found that young dogs fed on a deficiency diet showed a pronounced tendency to pyorrhœa alveolaris, and that the condition could not be cured—or could only occasionally be cured—by supplying vitamin A to the adult animal; whereas animals fed with a proper supply of this vitamin early in life did not develop pyorrhœa. There was no doubt great scope for the application of modern principles of dietetics in antenatal treatment. A woman during pregnancy should be supplied with a diet particularly rich in protective elements. The possibility that the size of the child at birth could be influenced by restricting the diet of the mother had, he believed, led a certain accoucheur deliberately in cases to restrict the quantity of the diet of a mother with a small pelvis. Various dietary restrictions, particularly of protein intake, might lessen the tendency to toxæmia during and immediately after delivery.

Dr. W. CRAMER said that in view of the large number of different constituents necessary to diet it seemed in theory impossible to construct a diet which was adequate; but, of course, long before anything was known of modern dietetics millions of people had lived long and healthy lives on diets dictated by experience. The right diet was a very mixed diet if one could afford it. The problem of applied dietetics was not a question so much of vitamins and salts as of cost. The only way in which to construct a sound dietary was to build around the basis of cereals and milk. A diet of cereals and milk in itself was not adequate, but it avoided most of the mistakes, and it furnished in the cheapest possible way proteins, fats, carbohydrates, and most of the important salts except iron, and most of the vitamins except vitamin C. Yet the consumption of milk in this country was probably lower than anywhere else in the civilised world, and at the same time the dairying industry was crying out that it was ruined. The addition to cereals and milk of a small amount of fresh fruit, vegetables, and a little meat would provide as good a diet as could be obtained on a limited income. It was interesting to speculate what would have happened if vitamins had not been discovered, because, about 50 years ago, a complete revolution was made in dietary by the introduction of roller mills to produce white flour whereby the cereal on which the population mainly lived—namely, wheat—was deprived of vitamin B. White flour did not contain vitamin B, and the small amount of yeast that went into bread making brought in so little vitamin that it did not count. A second revolution was to substitute margarine for butter. If it had not been for the discovery of vitamins, these revolutions in the production of food would have gone on uncorrected.

Another important lesson learned from the vitamins was a new conception of the pathology of certain diseases. Animals which developed infections spontaneously were just as resistant as any others to infections introduced experimentally. The explanation, he thought, was that the mucous membrane of the respiratory and intestinal tracts was as much dependent on the supply of vitamin A as, for example, the uterus was dependent on the supply of ovarian hormone. It was easiest to think of vitamins as substances very like hormones, but instead of being manufactured in the body they were contained in the material eaten. When an insufficient amount of vitamins was taken certain specific tissues atrophied, with the result that, in the case of the intestinal tract, bacteria which normally inhabited the mucous membrane crept into the crypts and proliferated there, giving rise to a condition of alimentary toxæmia, and this, passing into the blood, set up a metastatic infection. Vitamin A did not seem to protect at all against virulent bacteria. He did not think that appendicitis occurred any more frequently among people on a deficiency diet than among people who had all the vitamins they required; nor did he think that any of the severe enteric infections were the result of deficiency. It appeared to be only the normal inhabitants of the respiratory and intestinal tracts which were kept in check by the normal mucous secretions. Nevertheless, there were probably a great number of conditions which began at any rate with a very indefinite condition of alimentary toxæmia, or whatever it might be called, and on that basis other diseases were implanted, so that the whole picture was very complicated.

Dr. S. MONCKTON COPEMAN referred to the question of possible danger from excess of certain dietetic factors, more particularly vitamins. It was not impossible that an excess of growth-favouring factors, which of course were absolutely essential to the young child, might be detrimental to the adult. He had tested the question first by experiments on animals and later in an experiment on human beings. Mice and rats were inoculated experimentally with cancer and put on a special dietary, and although they had not succeeded in preventing the development of cancer, the resulting tumours were more than three-quarters less in size than in the controlled animals. Certain patients suffering from cancer were found who were willing to adopt the dietaries suggested—namely, dietaries from which animal fat, eggs, cream, suet and the like had been eliminated. It was suggested that such a deprivation of food would have a detrimental effect in a depressing disease like cancer, but actually it was found that the patients so treated—who were hopeless from the operative or any other point of view—showed prolongation of life for months and years, and their painful symptoms were manifestly relieved. Dr. Copeman quoted statistical evidence favouring the theory that the incidence of cancer is affected by diet.

Sir FREDERICK HOBDAY spoke on dietetics as applied to veterinary medicine. A careful adjustment of diet had been successful in eliminating certain bowel diseases of horses. Since the instruction was given in large studs that horses were not to be allowed to drink a large quantity of water immediately after feeding, but to take water before feeding, the amount of colic had greatly decreased. A further factor was that horses, thanks to the eight-hour day for their drivers, were not nearly so overworked as in former years, and the disappearance of excessive fatigue had contributed to the same result. Asthma and allied ailments were quite common among horses and other animals which were fed irregularly, and various illnesses attacked dogs which were pampered and were not given the hard dog biscuits on which others flourished. The work done on calcium deficiency disease in cattle saved the agriculturists in this country a large sum of money every year.

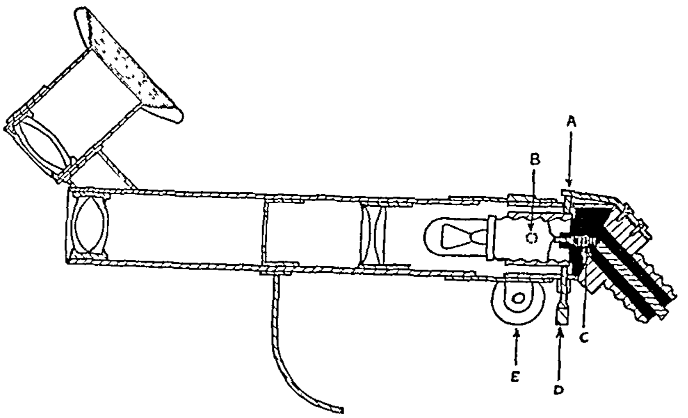
Sir ARNOLD THEILER spoke of mineral deficiency diseases in herbivorous animals as observed in South Africa; and Mr. H. H. GREEN of an acute intoxication found in cattle, which promptly disappeared when the animal was fed with phosphorus.

NEW INVENTIONS

A HAND SLIT-LAMP

THE value of the standard forms of slit-lamps for certain ophthalmic investigations is undoubted. But the immobility of these large instruments limits their use to the consulting-room and clinic.

The hand slit-lamp illustrated has been devised with the intent of securing an instrument that could be used as readily and as easily as an electric ophthalmoscope, so that it can be carried about and used with ease for the examination of children and patients in bed or in their own homes. It cannot by reason of its small size compete with the large instruments in magnification and in resolution of fine detail. Yet it will secure a valuable view of the media of the eye as deep as the anterior part of the vitreous. The small lamp as compared with the large might be said to have something like the relation of the two-thirds inch objective of the microscope to the one-sixth inch objective. But the small lamp gives the same effect of depth as the large lamp, so that its value for localisation is certain.



In the diagram, A represents the spring and D the screw controlling the lamp centre. B indicates the position of the trunnion, C the centre contact of the lamp, and E the clamping screw. Note that in practice the filament and slit are horizontal.

The lamp is fitted to the battery handle of an electric ophthalmoscope, or a small adapter can be supplied with leads to a torch battery or other suitable source of current. At the upper end, set at right-angles to the ophthalmoscope handle, is an eyepiece consisting of a triple achromatic lens giving a linear magnification of × 12. The lens holder is so made that other powered lenses can be substituted. The case of the eyepiece is graven with a scale, so that the focus of the lens, once found, can always be recovered.

Below the eyepiece, and at an angle of 45° to it, is the projection combination, forming a horizontal slit of light at a distance of one inch. It comprises a gas-filled lamp with a single-strand filament, made for two-cell or three-cell dry batteries. The centre pole of the lamp abuts on to a spring contact, so that all lamps can be set with the filament horizontal. A powerful condensing system produces an image of the filament upon a slit fixed in the tube, so that the projection lens, an achromatic lens of some 60 dioptres, can form a clear image of this slit, free from disturbing haze or filament irregularities.

In use, the instrument must be kept steady in relation to the eye of the patient, and yet allow focusing for depth. This can be obtained by the following manœuvre. The lamp is held by the main tube with the battery handle or adapter hanging down. There is a trigger-like spur projecting below the main tube, and this lies conveniently between the second and third fingers. The thumb rests on the top of the tube, with its end in the angle between the tube and eyepiece; the forefinger lies along the side, so that the projecting tip of the finger can rest against the patient's cheek at the lower border of the orbit. This contact gives steady support. Alternate crooking and straightening the forefinger brings the lamp nearer or further from the eye and gives focusing for depth.

Adjustments of the instrument are of the fewest, normally the eyepiece alone is likely to require setting. But the setting of the lamp bulb, in case of replacement, needs attention. The filament must be horizontal and in the axis of the system. Whether or no this adjustment is correct can be seen by looking at the face of the projection lens. The bright line of light should cut the lens horizontally into two equal parts. If this line is not true the position of the filament must be altered. The lamp mount is pivoted at its front end on a horizontal axis on trunnions. At the back there are a screw and a spring on a vertical axis, the one lifting the back, the other allowing it to fall. As the back rises, so the filament is lowered and vice versa, the movement being made by releasing or screwing in the lower screw. The distance between the lamp and the condenser system can be varied by loosening the large-headed screw under the lamp end of the tube and allowing the tube to slide over the lamp stem a little. This large-headed screw should be turned firmly when the adjustment has been made. Once the adjustment is obtained it need not be altered until a new lamp is required.

It is better not to wear spectacles when using the lamp so that one's eye can be well within the shield of the ocular. It is well not to over-run the electric bulb, so when a new battery is used the switch to the rheostat should be turned on no more than two-thirds until the battery weakens.

The hand slit-lamp is made by Messrs. Rayner of New Bond-street, London.

N. BISHOP HARMAN, F.R.C.S.

WORK OF WOMEN'S HOSPITALS.—The report for 1932 of the Royal Waterloo Hospital for Women and Children states that there were 2300 in-patients and 14,740 new out-patients; the latter made over 76,000 attendances. There is an accumulated deficit of £5000.—The Birmingham and Midlands Hospital for Women (the Women's Hospital, Sparkhill, and the Maternity Hospital) and the district midwives last year dealt with 6162 patients. The pressure on the beds at Sparkhill was "greater than ever"—there were 2066 patients. The average cost per in-patient was 10*s*. 8*d*. per day. There were 1734 in-patients at the Maternity Hospital.

REVIEWS AND NOTICES OF BOOKS

Significance of Phosphoric Esters in Metabolism

By ROBERT ROBISON, Ph.D., D.Sc., F.R.S., Professor of Biochemistry, University of London; Head of the Department of Biochemistry, Lister Institute of Preventive Medicine. New York: University Press. 1932. Pp. 104. 11s. 6d.

THERE have been of recent years many publications on the rôle of phosphorus in the body, and the whole question of phosphorus metabolism has become one of the utmost importance, and not only from the point of view of the human biochemist, since phosphorus has a bearing on many fermentation processes. This volume is based upon the three Christian A. Herter lectures given by Prof. Robison in New York in 1931. It is always a source of pride for English workers to look through the list of Herter lecturers and to see the relatively large number of British investigators. The original lectures have been expanded, and a very full review of the literature up to 1932 is here provided; the major contributions in this particular field have been made by Prof. Robison himself.

The first lecture deals with the distribution of phosphoric esters in nature and gives an up-to-date account of the very loosely defined group of substances of the lecithin and phospholipin type. The compounds of phosphoric acid with the carbohydrates are described and particular reference is made to the occurrence of the compounds in bone. The second lecture deals with the method of calcification occurring naturally in cartilage and bone, and here is to be found a very readable account of the researches which have been conducted during the last ten years at the Lister Institute. The final lecture is concerned with calcification in vitro and establishes with precision the conditions which govern this complicated process.

The work is essentially a summary of what is known about phosphorus in connexion with metabolism, and is a very valuable contribution to the literature of this subject.

L'angine de poitrine

Formes cliniques traitement médical et chirurgical. By CAMILLE LIAN, Professeur agrégé à la Faculté de Médecine de Paris; Médecin de l'Hôpital Tenon. Paris: Masson et Cie. 1932. Pp. 430. Fr.55.

Prof. Lian and his pupils, after detailed and exhaustive study, have come to the conclusion that angina pectoris is a syndrome, encountered in diseases of the arteries or of the heart of most diverse kinds and found even where no cardiac lesion exists. They point out that to give this name to one particular category is as valueless as to say that hæmoptysis shall be the name given only to those cases where pulmonary tuberculosis is the cause of the coughing up of blood. Nevertheless, they admit that the fundamental though not unique cause is coronary stenosis. The clinical manifestations are divided into three big ætiological groups: (1) angina cardio-arterial, coming on generally after the age of 40 years in cases showing hypertension or vascular sclerosis; these cases constitute four-fifths of all cases of angina pectoris; (2) angina of cardiac origin appearing at about 30 years of age in subjects suffering from rheumatic valvular disease or purely functional conditions, such as paroxysmal tachycardia; (3) functional angina attacking subjects with normal cardiovascular systems. These three groups are subjected to minute clinical, electrocardiographic, and anatomical examination, and a further subdivision is made of the cardiovascular anginas into the common form accompanying muscular effort or effort and repose; the so-called "Angor aigu coronarien fébrile," the name given by Lian to the condition we know as coronary thrombosis; and finally the abdominal anginas. The functional anginas are divided into reflex, nervous, and toxic. The section on treatment is exceptional in being sufficiently long and detailed to be really useful. All the usual methods are discussed, and in addition three less well-known treatments are described in detail—namely, the intravenous injection of iodides, subcutaneous injections of carbonic acid gas, and application of X rays; these measures are said to have given particularly good results. According to Prof. Lian certain cases have rapidly and definitely improved under radiotherapy, even when all medical treatment has failed; in some cases, on the other hand, it has no effect. Diathermy is discussed both as a form of treatment in coronary thrombosis, where it is said to alleviate the pain, relieve the spasms, and improve the circulation, and in angina pectoris of whatever ætiology; Prof. Lian has abandoned diathermy except in cases of coronary thrombosis and in a few cases of reflex angina. The use of muscle extract is dismissed with the statement that the premises on which its use is based are so little credible that it should fall rapidly into well-deserved obscurity.

Prof. Lian's teaching is clearly and methodically set out and is easy to follow, and an extensive bibliography is supplied.

Clinical Gynecology

By C. JEFF MILLER, M.D., Professor of Gynecology, Tulane University School of Medicine. London: Henry Kimpton. 1932. Pp. 560. 50s.

ONE of the most important contributions to gynæcology in recent years was Prof. Jeff Miller's "Introduction to Gynecology," which provided, in delightful style, a short summary of gynæcological diagnosis and pathology. This was a good basis upon which students could build a study of gynæcology. A companion volume has now been prepared in order that students already well grounded in diagnosis and pathology should learn therapeutics from the same reliable teacher. The work is, however, not quite so satisfactory as its predecessor, though it contains much useful information, and the opinions expressed are for the most part sound. The section dealing with the treatment of salpingitis is an excellent contribution, full of wise judgment, which deserves careful study. Similarly the treatment of carcinoma of the cervix is admirably dealt with from all points of view. But some of the minor gynæcological ailments receive scant attention, and it is doubtful whether practitioners will be satisfied by the paragraphs on pruritus vulvæ. Trichomona vaginitis is considered in detail; it is extraordinary how many different treatments are in use. Operations are described separately at the end of the book; illustrations are plentiful, but some of the drawings might be clearer. There is some repetition, for treatment, which is often operative, is described in the first part of the book, and later on the operation is detailed again. Moreover, in certain places, after-treatment is described before technique has been considered. Despite these disadvantages, the book is a worthy contribution illustrating the practice of the modern school of American gynæcology, and should be of particular service to resident medical officers.

Walter Bradford Cannon

Exercises Celebrating Twenty-five Years as George Higginson Professor of Physiology October 15, 1931. Harvard University Press. 1932. Pp. 94. 10*s.* 6*d.*

Prof. Cannon has been for many years a leading physiologist, and in America one of the relatively few who have followed the outlook and technique of what may be called classical British physiology. For these and for personal reasons many people in this country will be interested to read this account of the ceremonies at Harvard surrounding the presentation of his portrait: a reproduction of the picture and a charming speech by the late Prof. Graham Lusk should reconcile them to the rather excessive price. Prof. Cannon's implacable faith in the righteousness of investigation has led him into many fruitful inquiries, still, we hope, far from finished. Much of his work was admirably summarised in his recent book "The Wisdom of the Body," and his explanations of shock, of how we get into a temper, why we are thirsty, and so on, have made his name familiar to many who are not professional physiologists.

Epidemiology in Relation to Air Travel

By ARTHUR MASSEY, M.D., D.P.H., Medical Officer of Health for the City of Coventry. London: H. K. Lewis and Co., Ltd. 1933. Pp. 68, and five maps. 7*s.* 6*d.*

THIS little book is an elaboration of the speculations which Dr. Massey has previously made [1] on the possible risks to the public health arising from the introduction of regular long-distance flying, together with a summary of the views of others on the same subject. By means of excellent maps he shows that journeys by air from distant countries can now commonly occur within the incubation period of the major infectious diseases. He also discusses the possibility of insect vectors being transported alive by air into uninfected areas, and various subsidiary questions, such as the disposal of sewage from aircraft and the general difficulties of sanitary control. It is a pity that the text of the proposed International Convention for the Sanitary Control of Aircraft is not given. The diseases considered are yellow fever, cholera, plague, malaria, typhus fever and relapsing fever, and small-pox.

Materia Medica, Pharmacology and Therapeutics

Third edition. Reset. By WALTER A. BASTEDO, Ph.G., M.D., Sc.D. (Hon.), F.A.C.P., Assistant Clinical Professor of Medicine, Columbia University. London: W. B. Saunders Co., Ltd. 1932. Pp. 739. 32*s.* 6*d.*

THERE is nothing strikingly original in the arrangement of matter in this book, which in the main follows the lines of some of the better known works on pharmacology and therapeutics in this country. But it is written by a physician of experience who is also a pharmacologist, and therefore most stress is laid upon that aspect of pharmacology which is of immediate practical interest and importance. The first part of the book consists of a succinct description of the constituents of organic drugs, pharmaceutical preparations, and methods of administration, and of dosage; while it closes with a brief but adequate discussion of the rapidly decaying art of prescription writing. By far the greatest part of the book is taken up with the discussion of individual remedies. These are classified in some instances according to their action on different parts of the body, the circulation, the central nervous system, the peripheral nervous system; in others according to their therapeutic uses as cathartics, diaphoretics, emetics, and so forth. The section on the pharmacological action of drugs is up to date and adequate, and the discussion on their therapeutic uses is in many cases excellent though occasionally a little uncritical.

The book can be cordially recommended to students and practitioners of medicine.

Basic German for Science Students

By MARIE L. BARKER, Ph.D., lecturer in German in the University of Edinburgh. Cambridge: W. Heffer and Sons. 1933. Pp. 164. 6*s.*

"IN the beginning God created heaven and earth" is an unusual sentence to find at the beginning of a scientific book, yet in the introduction to this book the author has successfully used the first chapter of Genesis as the reading matter on which she has based her outline of German grammar, and from which she has drawn many of the important basic words which must be learnt at an early stage in every language. In the next section of the book (Part I.), which is devoted to general passages, the author proceeds further to enlarge the student's vocabulary with passages describing the more advanced version of the same phenomena supplied by science, and also the development of man and his civilisation. Two extracts from general scientific works precede Part II., which is made up of a variety of technical passages typical of the vocabularies of the different branches of science; chemistry, botany, physics, mathematics, and medicine are all represented. The medical extracts include samples on therapeutics, pathology, histology, physiology, anatomy, and embryology, and the book is arranged so that it may be used by the student who is teaching himself. Sufficient grammar for a reading knowledge of German is given clearly and concisely in the introduction, the English version of each prose passage is printed opposite the German, and basic words are printed at the foot of each page as they occur. The author hopes, perhaps optimistically, that having reached the end of the book the student should be familiar with over 1000 basic German words. The work includes also some specimen examination papers for chemistry students and a complete vocabulary where basic words are printed in heavy type. Some sensible phonological hints are given at the beginning, and there is a short list of useful abbreviations and chemical terms at the end of Part II. This book should give the student an adequate general foundation for the reading of scientific German, and after mastering its contents he should have no difficulty in getting up the technicalities of his own specialty.

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[1] See THE LANCET, 1931, ii., 591.

THE LANCET

LONDON: SATURDAY, MARCH 25, 1933

THE MECHANISM OF PROTEINURIA

Although "albuminuria" is common enough, and has long been the subject of careful clinical observation, the mechanism whereby protein can escape from the blood into the urine has not yet been adequately explained: indeed, relatively little sustained effort has been made of late years to elucidate this problem. It is known, of course, that egg-albumin, if introduced into the circulation of a mammal, will be excreted in the urine, and this effect has usually been explained by the hypothesis that the kidney acts as an eliminator of foreign substances from the blood, but Cushny in his monograph on the excretion of the urine observed that the glomerulus usually appeared to be impermeable to colloid substances, and concluded that the passage into the urine of proteins, such as egg-albumin, was dependent upon glomerular damage. Very little advance has in fact been made in our knowledge of this aspect of renal function since the work of Posner at the end of last century.

In a recent contribution to The Lancet[1] Mrs. Phyllis Kerridge, Ph.D., and Dr. L. E. Bayliss attacked the view that the excretion of proteins by the normal kidney depends on whether they are foreign to the body. And on the basis of a number of perfusion experiments with the pump-lung-kidney and with intact anæsthetised animals they have been able to show that the facility with which any protein passes through the glomerulus depends upon the size of its molecule. Their estimates of the molecular weights of the different proteins used have been taken from Svedberg's figures. Molecules with a weight below 68,000, such as egg-albumin, gelatin, and Bence-Jones's protein are excreted, while those with a weight above 68,000, such as the serum proteins, are retained. As promised in their first communication a full account of the work has now been published elsewhere[2] with the collaboration of Dr. Dorothy S. Russell, who has examined histologically a number of the kidneys used in these experiments. Those interested in the subject should refer to this paper for details. Without losing sight of the fact that alterations in capillary permeability are doubtless responsible for proteinuria in some diseases of the kidney and of the cardiovascular system, it is clear that a good case has been made out for a purely mechanical basis of proteinuria in the normal kidney. Both physiologically and histologically there was no evidence of any glomerular damage associated with the passage of the smaller protein molecules, such as egg-albumin, into the urine. But lest the reactionary-minded should still argue that damage may yet exist that eludes microscopical examination, an interesting observation by these investigators may be quoted which seems to dispose of this objection. It happens that gelatin, in distinction to other proteins, is not precipitated by trichloracetic acid. The passage of gelatin into the urine in these perfusion experiments was detected by means of picric acid, and the addition of trichloracetic acid caused no further precipitate such as would be anticipated if the glomerular capillaries had sustained any injury that caused an increase in their permeability.

The replacement by this newer mechanical hypothesis of the older teleological theory that ascribed an almost uncanny power of discrimination to the renal glomerulus will be welcomed as an advance in our conception of renal function. It will doubtless be asked what light such a theory may throw on the question of clinical albuminuria. It is clearly desirable that the physical properties of the proteins that are excreted in such disorders as cardiac failure, nephritis, and so on should be investigated anew. An encouraging start in this direction has already been made by E. Andrews, W. A. Thomas, and W. F. Welker,[3] who find that nephritic serum, though poorer in proteins than normal serum, has greater hydrophilic properties, while the urinary proteins show an abnormally high degree of dispersion and will readily pass through a collodion membrane. The proteins excreted in nephritis appear therefore to differ from the normal blood proteins. On the basis of their experiments these workers suggest that alterations in the mineral salt balance result in a pathological escape of tissue proteins into the circulation in nephritis, with the formation of protein complexes possessing a smaller molecular aggregation or in a higher state of dispersion than is normally associated with the serum proteins. This, though admittedly pure theory, converges in an interesting way towards a possible common ground with the theory of Kerridge and Bayliss. The investigation of various types of nephritis from this angle may be expected to throw valuable light on the disturbances of metabolism that occur in Bright's disease.

A TEST OF TELEPATHY

Belief or disbelief in the possibilities of telepathy and feats like water-divining seems to be determined by temperamental rather than intellectual influences. To some people belief in them is a clinging to the superstitions of a pre-scientific age: to some they offer a field of research that may ultimately enlarge the scope of science: to some they give a pleasing proof of the impotence of science to understand certain phenomena the existence of which it conveniently denies. Perhaps it is asking too much of mankind to hope for a final decision and cessation of argument, but it is not too much to ask that any serious investigation should take into account all the pitfalls, statistical and psychological, that may lurk beneath the simplest-looking and most convincing observations.

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[1] The Lancet, 1932, ii., 785.

[2] Jour. of Physiol., 1933, lxxvii., 386.

[3] Arch. Internal Med., 1929, xliii., 445.

Incidents of "premonition" or of knowledge of events happening beyond the individual's ken, and subsequently found to be true, are, as everyone knows, by no means rare. The difficulty in assessing their value as evidence of telepathy, or of some other psychic power, lies in the absence of any means of measuring the probability that they are not due to coincidence. A common example of premonition in the war period was the feeling of a mother that her son was in danger and calling for her help, and the subsequent news that he was killed at that hour. But it is obvious that innumerable mothers must have had the same feeling at one time or another during the period of the war, and it is only when the thought and the subsequent news coincide that the premonition is remembered and recorded. In such matters the common error of recording the "successes" and ignoring the "failures" is at its highest. Another test of telepathy commonly adopted is that in which one person endeavours to convey to another "telepathically" some object of fact which he has in his mind. Such a test, it will be remembered, was carried out a few years ago under the auspices of the B.B.C. In these tests also we do not know the underlying probabilities, or in other words what proportion of right answers are likely to be due only to coincidence.

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[2] Experiments in Psychical Research at Leland Stanford Junior University. By John Coover. Stanford University. 1917. Pp. 641.

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During the two years of this comprehensive investigation 162 patients with acute rheumatic fever were studied. Of these 50 were treated with salicylates or vaccine and were not included in the present survey, which comprised 105 who had no form of therapy which might be regarded as specific, and no antipyretic drug. They were considered in three groups, all having active disease: those with polyarthritis with either no heart involvement or old cardiac trouble which was inactive; those with chorea; and those with a history of repeated rheumatic infection and advanced structural heart disease. Actually only 47 patients remained in hospital long enough to fulfil certain conditions laid down as to the cessation of activity, the remainder leaving for various reasons. The age-distribution of these 47 patients was as follows: under 20 years, 18; between 20 and 29 years, 11; between 30 and 39 years, 14; and between 40 and 49 years, 4. They were distributed in the three groups outlined above, with 29 in the polyarthritis group, 6 in the chorea group, and 12 in the carditis group. The actual clinical results in this total of 47 cases are set out in great detail. Comparing these patients with another series described by H. F. Swift, in which drugs were used against the rheumatic process, the present authors conclude that the elimination of such remedies did not prolong the illness. Without antipyretics the temperature appeared to subside spontaneously; as a rule it became, and remained, normal after but a single cycle of fever. In 22 out of the 29 patients with polyarthritis the joint complications subsided, untreated, in a week, and recurrences, which were seen in half the cases, affected fewer joints, were less severe, and were of shorter duration than the initial attacks. Cases were encountered in which spontaneous subsidence of arthritis was as abrupt and complete as when salicylates were used.

Variations in the P–R interval noted on the electrocardiogram were wide and inconstant and did not appear very different from those seen in patients who had had salicylates. Tachycardia, like the fever, in general appeared to subside spontaneously. There were six deaths in the series, five from cardiac failure in association with active carditis, and one with pericarditis and profound toxæmia with a rapid downhill course from the onset. Unfortunately studies of the sedimentation-rate were not made, for the method only became known to the authors after the work had been begun; but their studies seem to have been sufficiently exhaustive to justify the conclusion that "in adolescence and adult life the acute manifestations of rheumatic fever tend to subside spontaneously."

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ANNOTATIONS

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THE many factors that may promote peptic ulceration can be classified as general or local: under the one heading we have all the circulatory, toxic, chemical, and constitutional variations which are suggested as exciting or predisposing causes, while under the other there are several possible sources of damage to the mucous membrane. The part played by dietary indiscretion in causing such damage has lately been considered by Prof. R. Ehrmann,[1] of Berlin, who has analysed some 7000 cases of peptic ulcer and also about 800 autopsies. He notes that during the years 1917–24 there was a gradually increasing incidence of ulcer, followed by a conspicuous diminution. This rise during and just after the late war Ehrmann attributes to the unsatisfactory diet of those times, which he regards as very favourable to the production of local gastric injury. He points out that at this time the diet was voluminous, coarse, and lacking in fat, so that the stomach was likely to be unduly distended. According to his view, peptic ulcers arise, like wounds of the skin, through injuries, hæmorrhages, or necroses, particularly situated along the *Magenstrasse*—i.e., the lesser curvature—and are primarily due to faulty diet. Gastric ulcer he describes as a disease of the "seven lean years" in contrast to cholelithiasis which he regards as a disease of "fat years."

L. W. Kohn,[2] on the other hand, assumes that various factors are responsible, and emphasises the significance of local thrombosis of gastric arteries, comparing them with the changes seen in thrombo-angiitis obliterans. On these lines he has treated a number of patients with intravenous injections of sodium citrate, in the hope of improving the local blood-supply to the stomach. In his studies, which are not reported in detail, he has noted an increased clotting tendency of the blood in ulcer patients, and he considers that sodium citrate has the ultimate effect of lessening coagulation, in spite of some of mankind to hope for a final decision and cessation of argument, but it is not too much to ask that any serious investigation should take into account all the pitfalls, statistical and psychological, that may lurk beneath the simplest-looking and most convincing observations.

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The mass of material which these big-eater cells will take up is important in determining their functional nature as compared with monocytes of the milk spots which take up only a small amount of foreign material.

The tuberculo-phosphatide when injected into the peritoneal cavity was found to be taken up by the big-eating clasmatocyte only in small amounts, but was absorbed in such large amounts by the young connective tissue cells and monocytes that the milk spots appeared swollen to the unaided eye. When studied with supravital staining methods the cells which engorged the material were found to break into finer and finer particles in three stages: (1) cells with largest vacuoles filled with phosphatide either intact or slightly changed (a phosphatide cell); (2) cells showing cytoplasm filled with a rosette of many coarse vacuoles, uniform in size, making the cell appear to have a foamy cytoplasm (the coarse vacuolated epithelioid cell); (3) a cell with a rosette of such tiny vacuoles that the cytoplasm appeared dense and nearly uniform in structure (the typical epithelioid cell). This third stage is reached in the second week. With repeated intraperitoneal injections of the phosphatide there was a marked maturation of the monocytes and production of epithelioid cells in such numbers that the outlines of the milk spots became obscured. It seemed clear, therefore, that the epithelioid cell was the characteristic response to tuberculo-phosphatide, and was associated with phagocytosis. Other immediate reactions were minimal and consisted only of a transient emigration of leucocytes from the tissues. The epithelioid cell of the third stage has the same type of rosette in the supravital staining reaction as the Langhans giant cell. It is a multinuclear epithelioid cell, whereas the so-called foreign body giant cell is a reaction to foreign material by fusion of cells, usually monocytes. Caseation and infiltration of lymphocytes forming complete capsules followed as in the ordinary natural infection. Dr. Sabin considers that caseation is the end stage of the epithelioid cell, the infiltration of the leucocytes being secondary to the death of this cell. He regards these changes as the specific reaction to the phosphatide, and such other reactions as migration of leucocytes from the blood-vessels, their phagocytosis and destruction by clasmatocytes, the development of plasma cells, the increase in lymphocytes, in young connective tissue cells, in fibroblasts, and the development of new blood-vessels as non-specific reactions.

An unknown fatty acid of high molecular weight and designated phthioic acid was next used. This was the only substance isolated from the original fatty acid of the bacillary material which produced a response of tubercular tissue. Its empirical formula is $C_{26}H_{52}O_2$. It is a heavy oil and much too irritating to be used undiluted, causing necrosis and complex response. When diluted with mineral oil it gave a diffuse reaction of epithelioid cells of the typical third stage described above. Further researches showed that the specific activity towards the production of epithelioid cells was only produced by a dextrorotatory acid obtained by the fractionation from the phthioic acid. Next an unsaponifiable wax, believed to be a higher alcohol with the formula $C_{94}H_{188}O_4$, was tested. The cellular reaction produced to this unsaponifiable alcohol showed undifferentiated connective tissue cells and leucocytes. Lastly an acetone-soluble fat was used. This produced by far the most complex cellular reaction of the substances tested. There was a diffuse reaction of epithelioid cells as in the case of fatty acids, but in addition there was a general infiltration of the tissues with leucocytes, an increase in undifferentiated connective tissue cells, fibroblasts, lymphocytes, plasma cells, and a marked increase in new blood-vessels with hæmorrhage.

All these tests with tuberculous lipoids therefore suggest that both the tuberculo-lipoids are remarkable stimulants of the cells of connective tissue. Some of them, such as the phosphatide, act as a foreign body and produce effects by phagocytosis; others, such as the unsaponifiable higher alcohol, act as a stimulant without being phagocyted; whilst yet a third, the acetone-soluble fat, is an extremely complex irritant. The explanation of the cellular reactions in tuberculosis are to be found, the author considers, in all these reactions, the epithelioid cell being the result of phagocytosis of a tuberculo-lipoid by monocytes and young tissue cells. Lastly, Dr. Sabin found that polysaccharides obtained from lipoids and from the whole bacillus produced migration of leucocytes from the blood-vessels and damaging of them so that they were quickly phagocyted by clasmatocytes. This was a constant reaction regardless of the number of injections. Although there is no fraction of the tubercle bacillus which does not produce this reaction to a certain extent it was considered to be so consistently found with all the polysaccharides as to raise the issue as to whether the material in the other fractions may not be the content of carbohydrate.

The protein fraction from tubercle bacilli is responsible for the reactions that give the skin test, a reaction common to all other proteins, but a particularly sensitive one in the tuberculous animal. Given in sufficient doses this fraction produces a rise of temperature, then a rapid fall of temperature followed by death. The cellular reaction produced thereby appears to be mainly a proliferation of plasma cells with damage to the endothelium of the blood-vessels causing hæmorrhage.

THE QUANTUM THEORY OF INFECTION

It is now nearly five years since Brevet-Colonel C. A. Gill, I.M.S., brought out his book entitled the "Genesis of Epidemics," based largely on experience as director of public health in the Punjab.[1] The report of the department for 1931, now before us, is the last for which Colonel Gill will be responsible—he has been transferred to Burma on promotion—and it is interesting reading in the light of a theory of epidemicity to which in his book he gave the name of the quantum theory. Nature in general exhibits a remarkable unity of design, and one would not expect to find a separate mechanism of epidemicity in each specific disease. Plague, cholera, small-pox, malaria, influenza, and the rest may display many distinctive clinical and epidemiological features, but they all show a similarity in periodicity and seasonal incidence, in wave form, diffusibility and toxicity, and in their special incidence upon certain age-groups; these are the genetic features of epidemic disease. If, he argued, a unitary mechanism can be postulated for all epidemics, then several important implications follow. (1) The intensive study of any single epidemic disease will throw light on the general law. (2) General laws may be deduced from specific instances. (3) Investigations in connexion with animals and plants may elucidate problems of human epidemiology. (4) The complexity of problems of epidemic causation and investigation is simplified. The basic principle of the quantum theory is that all epidemic manifestations are the outcome of loss of equilibrium between the dose of toxin and the degree of resistance of the subject. Colonel Gill could discover four factors in the mechanism of an epidemic: the reservoir of infection, the parasite factor, the immunity factor, and the transmission factor—the last being of predominant importance. A prolonged interruption of transmission would naturally be followed by a sudden increase, given favouring circumstances in which meteorological and atmospheric conditions play a large part. The Punjab offers exceptional opportunities for the intensive study of epidemics of malaria, and the quantum theory works out thus. Regional epidemics are mainly dependent on unstable climatic conditions. For prolonged periods these may be unfavourable to transmission, with the result that immunity is lowered. Then comes an exceptional monsoon, with a complete change of climatic and atmospheric conditions, and the transmission factor suddenly becomes favourable; conditions are suitable for insect life, a vast increase of anopheles mosquitoes occurs, and the opportunities for transmission are greatly enhanced. High temperature and increased humidity are not only conducive to the metabolic activity and longevity of the insect host; they also favour a rapid completion of the sexual cycle of the parasite in the tissues of the insect, and an acceleration of the intracorporeal phase. There is thus a rapid multiplication of the infective cycle. The intensity of an epidemic is influenced by the number of persons exposed, and since mortality is mainly amongst infants and young children the average age of the population is important. In the Punjab the birth-rate is high (40 to 50 per mille), and the average duration of life low (35 years). The well-being of the population is also important; one of Colonel Gill's main contentions has always been that an under-nourished community is particularly liable to malaria; improved nutrition is accompanied by a lessened susceptibility. A crucial test of the theory would be provided if it were shown that epidemics can be predicted with precision. It was stated in 1928 that six forecasts had up to then been prepared; the data employed in forecasting were the humidity or rainfall factor, the spleen rate, the economic factor (as represented by the average price of food grains), and the coefficient of variability of fever mortality. In each case the intensity and distribution of the disease were accurately predicted.

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[1] See THE LANCET, 1928, ii., 655.

TUBERCULOUS MENINGITIS

TUBERCULOUS meningitis is so commonly found in association with miliary tuberculosis—especially in childhood—that it has been generally assumed to arise from a blood-borne infection of the meninges. Not every case of miliary tuberculosis, however, shows a coexistent meningitis. It has long been recognised, moreover, that the meningitis is occasionally caused by direct spread of the infection from a caseous focus in some neighbouring structure, such as the brain or one of the bones of the skull; and the meningitis so produced is morphologically identical with that found in most cases of miliary tuberculosis. These facts have led A. R. Rich and H. A. McCordock[1] to study the pathogenesis in more detail, and they have confirmed the observation that, while intravenous and even intracarotid injection of massive doses of tubercle bacilli experimentally will always produce a generalised miliary tuberculosis, it very rarely causes a meningitis. In the few exceptions to this rule the meningitis develops some time after the injection, and it can usually be shown to have spread from an older local caseous focus. On the other hand, injection of tubercle bacilli directly into the meninges was always followed by an intense meningitis with all the characteristics of tuberculous meningitis in man. The next step in Rich and McCordock's inquiry was to examine the brain and spinal cord in 82 cases of tuberculous meningitis. The material was cut into slices 3–5 mm. in thickness and the slices were carefully examined for small caseous foci. In 75 of the cases such foci, which had ruptured and discharged into the cerebro-spinal fluid, were found in the brain or meninges; in a further 2 cases there were discharging foci in the choroid plexus and in the vertebræ; while in the remaining 5 cases the material available for study was incomplete. These investigations indicate that diffuse tuberculous meningitis is not a direct result of a blood-borne infection, but is the result of discharge of tubercle bacilli into the cerebro-spinal fluid from adjacent caseous foci.

HEALTH OF THE NAVY IN 1931

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SCOTLAND

(FROM OUR OWN CORRESPONDENT)

MENTAL DEFECTIVES AND STERILISATION

Dr. J. R. Bailey, medical superintendent of garburn Institution, which is the chief Edinburgh stitution for mental defectives, has lately been scussing deficiency in its relation to heredity. It d been calculated, he said, that if every mental fective in every generation were sterilised, it would ll take 2000 years to stamp out the proportion of ental defect that was due to inherited taint. But heritance was not the only factor concerned: sease and injury to the developing brain in infancy d early childhood was responsible at least as ten, and produced the more severe grade of mental ficiency such as idiocy and imbecility, with epilepsy d paralysis as frequent concomitants. The defect at sprang from inherited causes was usually of the ss severe type; the feeble-minded grade, who, many instances, escaped observation or received supervision after they left the special school. erilisation in these cases would, in his opinion, ad to an increase in sexual promiscuity and a rapid read of venereal infection.

Greater care of the expectant mother, especially the direction of ensuring that she had a well-alanced diet, rich in vitamins; greater attention child life and health, especially in the earliest ears; more intensive research into the cause and pread of disease affecting the nervous system—these ere the methods, Dr. Bailey said, which would, lowly but surely, eliminate mental deficiency. They ere the same as the measures that would build up strong and virile race.

THE ADEQUACY OF MODERN DIET

In a lecture to the Edinburgh Women Citizens' ssociation, Dr. John Boyd Orr, director of the owett Research Institute, Aberdeen, said that an cre in Scotland now grew about five or six times as nuch as it did about a hundred years ago; and where ormerly a cow gave 300 or 400 gallons or less, a good ow now gave over 1000 gallons. Improved transport made it possible for us to draw our food now from lmost every quarter of the world. There was abundance of food, but the kind of food had changed remarkably. Up to the middle of the last century the people of Scotland were eating natural foodstuffs. With the introduction of machinery this had been changed. Instead of getting barley and oats, grinding them, and making them into bread, we now got white flour, polished rice, sugar, dried milk, and tinned foodstuffs. The natural foods had been changed into artificial foods with the very substances purified away that were necessary to perfect health. But a nation that could spend £1,000,000 a week on sweets and chocolate could very well afford the natural materials of good diet—plenty of milk, fresh eggs, fresh meat, fresh vegetables, fruit and sunshine, and whole wheat ground up. These were within the reach of most, especially skim milk, which contained everything except the fat, and yet was not regarded as an important item of diet.

GLASGOW ROYAL HOSPITAL FOR SICK CHILDREN

The Glasgow Royal Hospital for Sick Children celebrates its jubilee this year. The original hospital, projected in 1861, was completed in 1882 at a total cost of £13,000. There were 58 cots, later 74, and the annual cost of maintenance was £2000. To-day there are 300 cots and the annual cost of running them is £43,000. In the first year 300 children were treated; last year 5819 and 936 in the country branch. In 1907 the directors appealed for £100,000 to construct a new building, and raised the sum in a year. It was opened in 1914. This year the hospital closes with a balance on the right side, in spite of the depression.

IRELAND

(FROM OUR OWN CORRESPONDENT)

A CLEAN MILK BILL

The Minister for Local Government and Public Health of the Irish Free State has informed a deputation from the Clean Milk Society that he will use all expedition in introducing a Bill dealing with the milk supply of the country. The Bill has been drafted and its provisions are being studied in detail by the officers of his department. It is nearly four years since the Minister's predecessor announced the provisions of a Milk Bill which was to be introduced as soon as possible, but, in spite of questioning by medical and other deputies interested in health the Bill never saw the light. The provisions, as stated, were somewhat drastic, and no doubt roused the opposition of the agricultural interest, always strong in the Dáil. It is satisfactory that the present Minister recognises the danger to the community from the present almost uncontrolled production of milk, and one may hope that he will not lose time before establishing adequate control.

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

MEDICAL STUDENTS ABROAD

The strenuous and successful efforts made by the American medical profession during the present century to raise the standards of medical qualification have had some unforeseen results. One of them has been the uprising of numerous healing cults such as chiropractors and naturopaths with practically no standards at all. Another result has been that with the closing of numerous second-rate medical schools the remaining first-rate schools are not sufficient to meet the demand for medical education. It is widely believed that they are adequate to supply the medical needs of the nation and that there is already an over-supply of doctors. For this reason the medical schools are disinclined either to lower their high requirements in premedical education or to extend the size of their classes. The result has been that many would-be doctors have gone abroad for their medical education and returned with European diplomas claiming the right to practice in their native land. This displeases the State medical boards, who feel that there is a risk that the high standards of medical education achieved in recent times may not be maintained. At the annual meeting of the boards, held in Chicago on Feb. 14th, two resolutions were adopted. As a result all American students graduating from European medical schools after the present academic year must secure from a State medical board or other competent state authority a certificate to be endorsed by the Association of American Medical Colleges in proof of satisfactory premedical education. They must also pass an examination qualifying them to practise in the European country in which they must have studied for at least four academic years. American students in Great Britain should investigate these new conditions with to accept the report in whole or in part." In particular the judge may so refer to a special referee any question as to the nature, extent, and permanence of an injury alleged to have been caused by the negligence of a party to the action. It seems, however, that the use made of this new facility has so far been disappointing. Properly applied, it would promote the early settlement of many cases before trial. It would save much time now spent by medical witnesses in courts of law and it would give cynics less opportunity to point out how doctors can differ.

The Prejudice against Lunatic Asylums

An odd case, noted in the *Law Times*, illustrates the old-fashioned horror of institutional treatment for mental disease. Under a will made in 1925 a man left the residue of his estate to his brother " on condition that my friends keep me out of a lunatic asylum." Under a proviso to Section 10 of the Lunacy (Ireland) Act, 1867, there was at that date in force a power for " any relation or friend " to take " under his own care or protection " (on entering into recognizances for the patient's peaceable behaviour or safe custody) any dangerous lunatic who otherwise would have to be compulsorily detained in the local authority's lunatic asylum under the section. Thus, whether the testator was aware of the fact or not, there was a statutory provision under which his friends could do him the service he desired. " If," added the testator in his will, " they allow me to be put into a lunatic asylum," then £700 of his residuary estate was to go to the British Home and Foreign Bible Society and the balance to the brother. Within two years of making his will the testator was detained for a month in the Londonderry Asylum on the information of a neighbour. Did this deprive the brother of the £700 ? The executors submitted the point to the court in Northern Ireland, the brother contending that the condition was invalid. He had been living in Queensland (as the testator well knew) : he was unaware of the terms of the will and, if he had known of them, was not in a position to avert the detention order made many thousand miles away. The judge, however, upheld the condition. Such a stipulation is not invalid unless it is ineffectual or illegal ; mere eccentricity or difficulty of compliance does not upset it. The court had to assume that the will was the work of a sane man. However absurd it might seem, the bequest was subject to a condition precedent, and the condition had been broken. Thus the Society took its £700.

The 1926 report of the Royal Commission on Lunacy and Mental Disorder dwelt on the atmosphere of suspicion and aversion with which mental treatment was invested. Patients and relatives alike, it declared, hated the idea of resort to an asylum. The 1930 Act, it is hoped, is dissipating that atmosphere. It even abolished by statute the invidious nomenclature of " lunatic " and " asylum," substituting (as the British Medical Association had suggested) euphemisms which avoid any stigma. The Northern Ireland Parliament made similar provision last year.

A Jury's Second Thoughts

The Coroners Act directs that, after hearing the evidence, the jury shall give their verdict and certify it by an inquisition in writing. There seems no reason why the jury should not alter the verdict at any time before they certify it in writing. The inquest is not closed merely because an announcement has been made in open court and members of the public have left the building in the belief that a final decision has been made. It is nevertheless unusual for a jury to change its mind as a Kent jury did at an inquest last week. If it is desirable that the verdict should be delivered publicly (as a decision in the Irish courts suggests), any amendment of it ought to have equal publicity. The Kent proceedings concerned the death of a patient who was being anæsthetised before an operation in hospital. By one of those unfortunate mistakes from which human actions will never be entirely free, a bottle had somehow been wrongly filled, and the bottle labelled " ether " contained chloroform. The original verdict of the jury, announced in open court, was as follows : " We find that the death was due to syncope accelerated by the administration of the wrong anæsthetic. No blame attaches to Dr. X or Dr. Y for believing the patient was fit to undergo the operation. We absolve Dr. Y from any blame for the administration of the wrong anæsthetic. He rightly assumed the contents of the bottle to be correct. We are of the opinion that the mistake in regard to the bottle was due to an error on the part of Nurse Z. The jury consider that in future stricter supervision in regard to anæsthetics should be observed, also that the sister in charge should give more definite instructions to her juniors in regard to the preparation of the vessels containing the drugs." After the announcement of this verdict the nurse whose name had been mentioned protested and collapsed in court. The coroner, when about to write out the record of the verdict, evidently regarded it as unfair to place on the record the name of the nurse : she was regarded as a thoroughly competent nurse, and she had stated at the inquest that she did not touch the ether bottle, which was already filled. He therefore gave the jury, through their foreman, the opportunity of recasting the verdict so as to omit the nurse's name. The jury accepted the suggestion. The coroner is reported to have then said : " What shall we call it ? " Whereto the jury replied, " Misadventure." A verdict of " Death by misadventure " was then recorded. Even in its original form the verdict seems not to have been intended as one of manslaughter, since mere mistake or error of judgment does not amount to criminal negligence. It does not appear, therefore, that the jury's second thoughts affected any question of criminal liability. They merely eliminated words which need never have been inserted. There is, by the way, good authority for the rule that if the jury finds a verdict of manslaughter and gives particulars which show that the case is not one of manslaughter, the verdict will be quashed (R. *v.* Clerk of the Oxford Assize).

Some will think it a pity that coroner's juries do not confine themselves to a plain verdict without trimmings. Every coroner is aware of the tendency to long-winded verdicts even in simple cases, and (perhaps in the supposed interests of surviving relatives or other parties) to multiplicity of comment by way of rider. On the whole a long verdict is a bad verdict ; the shorter it is, the less to revise. Still the jury has some justification. The Act says that their certified inquisition is to set forth, so far as such particulars have been proved to them, " who the deceased was, and how, when and where the deceased came by his death, and, if he came by his death by murder or manslaughter, the persons if any whom the jury find to have been guilty of such murder or manslaughter or of being accessories before the fact to such murder." There is, however, nothing here to necessitate the mention of persons who are not guilty.

THE DOCTOR'S DAY

"Come, tell me how you live," I cried,
"And what it is you do!"

XX.—ON THE URBAN FRINGE

I AM usually awakened by my terrier who deposits my letters on the bed. This morning amongst the circulars of nostrum vendors and company promoters are several that will want filing later: a batch of medical record envelopes for new panel patients and some green cards requesting the return of others who have ceased insurance or moved out of the district; a report on a sputum; a request for a report on a panel patient who has been drawing sick pay for some months. This is opportune as I had thought of referring her to the regional medical officer myself; she does not seem to be unfit for *any* work, but always has a relapse or new symptoms when I suggest that she might "sign off." There is also a letter asking me to judge at a baby show and a notice of a meeting of the hospital managing committee.

Breakfast is interrupted two or three times by the telephone and soon after 9 A.M. I arrive at the surgery to find four or five people waiting, but the room will fill up just before 10 and I shall be there till nearly 11 as usual. An average morning surgery consists of six to eight private and the same number of panel patients. Most of our panel of a thousand is made up of clerks, typists, and domestic servants, with a few factory workers and shop assistants. Statistics kept over the last three years show that we see 66 per cent. of those on our list and this entails an average of 100 visits and 300 attendances per month.

CASES IN THE SURGERY

This morning's cases are fairly typical. The first is a little girl with a bead in her ear. If it had been in the nose I might have tried pepper, remembering a case where this practical measure promptly produced a sneeze and the invisible bead. The little girl is good and the hole in the bead lies propitiously for quick removal. Would half-a-crown have been exorbitant for a sniff of pepper?

Now come two regulars. The first a case of lupus, who has had a new nose grafted on from her arm. The nares of this had become so contracted that she was becoming a mouth-breather, but last year they were enlarged and she now wears a flesh-coloured prop in each. She should be fit for work soon, but the disfigurement is so great and the public so fearful of infection that I am afraid she will find it very difficult to get employment. I will suggest that she starts looking for work and continue to give her certificates in the meantime. The second is a patient with diabetes who attends a clinic in a London hospital, but comes to me for certificates. Legally I could give her a monthly one, but many societies will not pay out money weekly on a monthly certificate and as she cannot afford to wait a month I see her every Tuesday. Next comes a man for a dressing: quite a pleasant change at the surgery from the writing work. His neck shows a clean wound healing over where a carbuncle was excised five days ago at hospital. Another case is that of a woman at the menopause who fears she may be pregnant with her "seventh." She says it is cheap at 3*s.* 6*d.* to learn there is no pregnancy. Her record shows that she came for the same thing six months ago. Next Mrs. X wishes to engage me for her confinement. It is her first and she is two and a half months gone. I examine her to see that things are normal and take her measurements. As she has not engaged a nurse I give her a list of those I can recommend and send her away with instructions when to come again for further antenatal examination. Making a note in the "mid-book" I turn over the pages. There was a forceps case last week: otherwise I have not used forceps for six months and have attended 24 labours. Midwifery in private practice is much more likely to be normal than one expects after a short training in a lying-in hospital. As I look through the book it seems that the percentage of "normals" became higher and higher during the first five years of practice, so I suppose some of my early forceps were due to over-anxiety and the urge to rush in and do something rather than let nature have her way. My last patient is a young mother with a husband out of work and two children under three years—Will I tell her how to avoid further pregnancies? Information on birth-control is increasingly sought and it is high time the profession made up its mind on the subject and that something should be taught in our curriculum.

Before leaving the surgery I file the sputum report and deal with the panel correspondence. In the letter-box I find an envelope with something heavy inside. It is an old-fashioned door-key with a note requesting a visit later to Mrs. A.

COTTAGE HOSPITAL

From the surgery I go to hospital a mile away. There there is no resident medical officer, and the local practitioners attend their own patients and take duty in monthly rotation to be on call for accidents, anæsthetics, and emergencies. My patient who was operated on for fibroids is doing well; her neighbour is for operation this afternoon. I go over her heart and order an injection to be given beforehand. In the X ray department are the films and report of a barium meal and enema both confirming the presence of a suspected growth of the sigmoid colon. I must arrange for this patient to see one of the consulting surgeons or physicians who come down from London to the hospital on regular days to meet local practitioners and discuss with them their interesting or puzzling cases. The patient is saved the expense of train journey and hours of waiting at an out-patient department and appreciates the greater privacy and often less hurried examination given by the specialist. The practitioner has the advantage of discussion over the case and can moreover keep in contact with the patient right through an illness instead of losing sight of him during the most critical and interesting part of it, as so often happens when cases are sent to hospital out-patient departments.

In the children's ward my case of empyema is being dressed and I take the opportunity to go over her chest. A case of tonsillectomy has earache and remembering my own experience of three years ago, I ask sister to wrap warm wool round neck and ear.

It is now past eleven and I hurry home to hot chocolate and an appointment with a well-to-do woman who is suffering from the so-called "nervous breakdown." This is a delicate interview because I want her to consult a psychologist and yet not to feel that I have any doubt about the state of her mind.

A MORNING ROUND

After this comes the morning round, the first visit being to a nursing-home where a patient is recovering from an operation for hæmorrhoids. Here a telephone message reaches me to go at once to a case of asthma. I call for adrenaline as I pass home and the road takes me along a ridge between green fields to a house on the border of the district opposite the last street lamp; beyond this are only country roads unlit at night. The little boy I have to see suffers from asthma and eczema and at last we have tracked down the cause—sensitivity to horse dandruff. He cannot ride without getting eczema behind the knees or go for a drive in a dog-cart without an attack of asthma. He even got an attack after visiting the circus at Olympia. It had been half-term and he could not resist a canter round the grounds on his pony—result, an attack of asthma. He is given an injection of adrenaline and is soon relieved. Next I go to a house where I am always sure of a vociferous welcome and this from a patient who will care unless they are now in their final year of medical school.

IDIOPATHIC PLEURISY AS A RISK IN LIFE ASSURANCE

Louis I. Dublin and Herbert H. Marks have recently made a study for the Metropolitan Life Insurance Company of the risk of insuring applicants who give a history of "idiopathic" pleurisy. They fully recognise that these cases represent true pleurisy of various but unrecognised origins and also some cases that were not true pleurisy at all. Nevertheless their statistical analysis of these cases is full of interest. They found that the excess mortality was for the most part concentrated in the years immediately following issuance of insurance and was more marked among the younger policy-holders. Underweight adds to the bad prognosis in the younger age-groups but is of less importance in those of more mature years. The excess mortality is, as might be expected, largely due to death from tuberculosis. They conclude that no applicant with a reliable history of wet or dry pleurisy should be granted insurance within two years of his illness, nor within three years if he be under 35 years of age. If he is below this age ten years must elapse before the applicant can be accepted as a normal risk. At ages over 35 a few cases may be granted standard insurance after five years have elapsed. The majority of cases reporting pleurisy of unspecified type (neither "wet" nor "dry") lasting only two or three days may be treated with generosity. Such a history is not regarded as of much importance.

DEATH OF MAYOR CERMAK

The death of the mayor of Chicago from an assassin's bullet aimed at President Roosevelt is deeply regretted. Among the reforms established in his administration is to be counted an ordinance passed on May 4th, 1932, creating a board of health of five members. For a number of years before this Chicago had no legally authorised health department. The ordinance of May 4th last reorganised the personnel of the department, eliminating waste and increasing efficiency.

PANEL AND CONTRACT PRACTICE

Medical Benefit and the Unemployed

In the House of Commons last week Mr. Leckie asked the Minister of Health what he proposed to do about medical attention for the 60,000 or more insured persons who would, owing to recent legislation, pass out of benefit at the end of the present year; and the Minister answered that they would then be in the same position with regard to medical attention during sickness as all other persons who are now not within the scope of national health insurance. But is this really so? Most people leaving the ambit of the Insurance Act do so of their own accord. They may exceed the wage limit and so become able to pay for their treatment; or they may marry and again voluntarily pass out of insurance. But here are 60,000 or more people who, through no action of their own, are unable to pay insurance contributions. They belong to the insured group and not to any other; they are not passing out of benefit voluntarily—because of altered circumstances. They were obliged to become insured persons when first employed, and as such they had to choose to look after them a doctor who was willing to serve under the Act. Now when they go out of insurance benefit they will in theory be able to have the doctor of their choice, but it is perfectly clear that they will not in fact be able to do so, because they are not in a position to pay private fees. They will ordinarily receive attendance by those who still are, but are no longer called, parish doctors with the stigma attached to what used to be called poor-law relief. We have referred before to this unfortunate discontinuity of medical benefit, believing it to be a penny-wise policy on the part of the Ministry to treat this class differently from those who are better off. In the meanwhile, surely it is not correct to say they are in the same position as all others without the scope of the Act.

Records Then and Now

In the *St. Bartholomew's Hospital Journal* for March Dr. Philip Gosse has an interesting story to tell of contract work before the Insurance Act came into force. The club doctor was then appointed by the committee, and while it was definitely unwise to neglect any club members, the more especially if they were the friends of the council or of a member of the committee, yet the amount of attendance expected was not nearly s[illegible] what was at the present day. There was less tendency to make much of illness than there is now, for all the members of the club knew each other; the secretary was soon warned, and through him the doctor, that John Smith was not fond of work and it was quite time he ceased to be drawing club funds. The snag of the position medically was that if trouble arose about a particular member, and the committee of management became hostile to their doctor, he was apt to lose the whole club and not, as under present insurance practice, only that member and his family. Nor was the keeping of records included in the capitation fee. While it may be true that the records required under the Act of 1911 have not materially varied since, Dr. Gosse makes good fun of the large folding book containing name, age, sex, address, visits, and medicine supplied, which had to be sent to the insurance committee for periodical inspection. His cheque for the first quarter arrived punctually, but at the end of the second quarter none came; after expostulating he was told that no cheque would be sent until his records for the previous six months had been received for examination. "So after dinner that night," he writes, "I got down to it, and filled in a vast number of sheets with the names of every panel patient I thought I could remember having treated, with suitable crosses or lines to indicate domicilary calls or visits to my surgery. When I had made out what seemed to be enough of these to meet the requirements, I posted them off, and received my cheque by return." That such a feat of imagination was even then not unattended with risk may be seen from the sequel: "Not long afterwards a letter of thanks reached me from the local secretary to say that he had been instructed to write and inform me that at headquarters my meticulous and conscientious care of my insured patients was much appreciated, and that they hoped the example I had set would be followed by the other doctors in my area. It seemed that, according to the statistics, I had visited my patients at a rate of 300 per cent. higher than any of my colleagues." This official approval did not, however, increase his popularity, as a newcomer, with his fellow-practitioners, and afterwards we learn that he "fell into line and gradually brought down my numbers of visits to coincide with the rest." Things are strangely different to-day when the Ministry of Health have worked out areal averages for all kinds of practice, and H.M. Inspector of Taxes knows everything.

CORRESPONDENCE

FOOD AND HEALTH

To the Editor of THE LANCET

SIR,—I trust that all those concerned with the hysical condition of the unemployed, and especially f their children, will read the special article on Food and Health in your last issue. A careful study f this valuable contribution is especially desirable ecause certain reassuring reports have appeared recently. Thus at the meeting of the London County Council on March 8th, a report of the examination of the children in the elementary schools of London during 1932 was submitted. In this it was shown that the percentage of children found with abnormal nutrition, which was 4·8 in 1930 and 1931, ad only risen to 4·9 in 1932.

One cannot feel that conditions are satisfactory even when 4·9 per cent. of the children in the elementary schools of London are reported as suffering from want f the right sort of food, nor can one feel absolutely ssured that the reports of the school medical officers record fully and completely the results of the present period of financial stringency on the health of the school-children. The effects of under-nourishment are by no means always easy to detect by physical xamination. Moreover, they do not become evident at once. Furthermore, the amount of malnutrition that is recognised by an observer must obviously depend on the standard that he has in his mind during examination, and it is very easy for those engaged in this work to *confuse the average with the normal.* Should this confusion continue year by year, and about 5 per cent. of the children be recognised each year as below the *average*, a very considerable divergence from the *normal* may in fact exist after a period of years. That something of this sort is possible is suggested by two considerations: (1) a special report to the L.C.C., and (2) my own observations.

(1) On Jan. 17th last the medical officer of the L.C.C. reported on a special examination of 25 children of nine families attending a school in Poplar. These families were selected because social workers in the district felt uneasy about the children belonging to them. It was reported, however, after medical examination that the nutrition of only 7 of these 25 children was below the average, and in no case greatly so. The weights of 24 of these children were given in the report, and when I compared these with the average weights of children in the elementary schools of London at different ages I found that in 19 of the 24 the weights were below the average. The number of children examined is admittedly small, but it does seem significant that while only 28 per cent. showed signs of malnutrition as many as 76 per cent. were below the average weight of children of the same age in the elementary schools.

(2) During January and February, 1933, the medical examination of 53 children belonging to 21 families of the unemployed in one of the western districts of London was undertaken. The families were selected because we had reason to believe that members, other than those we examined, had shown signs of under-nourishment. There was, however, no selection of cases, and the record of every child examined is included in this report. I was assisted in this work especially by Dr. Margaret Ritchie, who examined with me about 90 per cent. of the children on whom we are reporting. Every child was examined by two of us before any opinion was given as to its physical condition.

In all cases the children were stripped and weighed, and their weights were later compared with the table of average weights of the school-children of London obtained from the education department of the L.C.C. In an explanatory note given with this table of weights, it is stated that the true weights of children under 7 are probably a little higher than those given in the Table. The children were examined in their homes and all were of school age with the exception of five that had not quite reached this age. In several of the families there were children below this age as well as a few above, but these were not examined.

We classified the defects observed under four headings: thin, rickety, flabby, pot-bellied. In not a few cases two defects were observed in the same child. In some cases we found it a very difficult task to determine whether a given child's condition was due to under-feeding or not. We appreciate that none of the above defects is necessarily an indication of under-nourishment; indeed, as will be seen in the Table which follows, with the exception of rickets, each of the defects described was observed in children that we did not regard as being underfed.

We have divided the children, for classification purposes, into those that in our opinion showed signs of under-nourishment and those that did not, and the general results of our observations are as follows:—

Under-nourished

No.	Sex.	Of average weight or over.	Below average weight.	Thin.	Rickety.	Flabby.	Pot-bellied.
15	Boys	2	13	11	4	2	4
8	Girls	7	11	9	11	3	3
23		9	24	20	15	5	7
			Not Under-nourished				
6	Boys	4	2	2	—	1	1
14	Girls	9	5	2	—	—	1
20		13	7	4	—	1	2

We also made inquiries of the parents as to how many of the children were having milk or dinners at school. We were informed that of the children showing signs of under-nourishment none was having dinners at school, but four were having milk which was given free. Of the children not showing signs of under-nourishment four were having school dinners given free, and three were receiving milk for which a charge was made. Several of the parents of the children showing signs of under-nourishment informed us that they had applied for school dinners, but these had been refused.

We were fortunately able to obtain and verify the income of each household and also the rent paid, and could therefore calculate the exact amount per head available to provide food, warmth, clothing, cleansing materials, and other necessities of life. This varied from 1*s.* 4*d.* to 4*s.* 6*d.*, and averaged 2*s.* 5½*d.* per week.

It might be objected that although 2*s.* 5½*d.* is a very small sum to provide all necessities, some of the persons concerned were very small children whose needs may have been much less than those of an adult or older child. Accordingly use was made of a table given by E. P. Cathcart and A. M. T. Murray in their report to the Medical Research Council (Spec. Rep. Ser. No. 151, 1931), and the "man never pay his fee. He is a mongrel dog who had suffered for years from corneal ulcers. He has not had one now for four years and bounds upstairs to talk to me while I see the lodger, a maternity nurse with angina pectoris. She is happy now because last month her landlady had a baby daughter and she nurses the baby occasionally; but the dog is very jealous.

The morning round takes me seven miles out through hedge-lined lanes past young lambs in one field and the herd of a model dairy in another, to a combined poultry and fruit farm. The owner fears she has cancer as she has found a "lump." It turns out to be so but I do not tell her. As she refuses operation I can only try to persuade her to see a surgeon so that my responsibility will be shared. On the way back I call on Mrs. A. and am glad to be rid of the key which has been weighing down my pocket all the morning. I let myself in, taking the loaf of bread and bottle of milk which have been left on the doorstep to the kitchen. Mrs. A. is in bed with a sore-throat, temperature, and some painful spots on her legs. She says she has only stayed in bed to save my time and is very distressed to be told she must remain there and that her daughter will have to leave work and come home to look after her and the rest of the family. After four short visits I come to the last for the morning. This is to a wealthy woman who has had a slight chill, and being very fearful of her health wants to know if it will be safe for her to go to a theatre to-night. This visit takes longer than any other although it is the most trivial. The pros and cons are argued and I urge her to go, which I know she had intended from the first, or she would not have telephoned for me.

This is a specimen morning and might be varied by giving gas for teeth extraction; anæsthetics for minor operations; or very rarely by doing a post-mortem or giving evidence at court. Once my partner had to go to town to choose a baby from an adoption society for a childless patient.

THE AFTERNOON

The afternoon is spent in finishing the round which usually takes till 4 or 5 P.M. in the winter, but may be quite free in the summer. On one afternoon a week we do tonsil and adenoid operations for the education committee; another is taken up by operations; and a third for consultations. My partner holds two surgeries a week in a village to which a number of our better-to-do patients have moved out and where a far-sighted builder is putting up villas as fast as he can.

The evening surgery is usually larger than the morning one as patients in work are only free to come then. In winter there may be 24 or more cases which means at least 2½ to 3 hours work, but in summer I have usually finished in 1½ hours. A day such as this is calm but sometimes everything is upset, as by a midwifery case coming off in the middle of surgery hours, or an accident call from the police.

A CHANGING BACKGROUND

It is not claimed that such a day has any special features distinguishing it from that of general practice elsewhere, except perhaps in its adaptation to a changing background. Fourteen years on the urban fringe have brought changes to the doctor's work as well as to the life of the people and the look of the district. My partner and I run our surgery in a 300-year-old wooden house, which is now practically the only old building in a town of modern shops and flats, and which is quite dwarfed by the giant trams passing to the market-place. Gone is the ancient cedar-tree which had been a landmark for miles, and the Tudor house with royal associations and underground passages to rectory and church. Gone is a fine old red-brick mansion and its handsome wrought-iron gates, which have been removed to one of the universities; in its place is a housing estate with paved streets and roofs of houses all hideously alike. Here and there in the district i is still possible to see red-tiled roofs overgrown wit moss. Occasionally one finds beautiful oak panellin in a coal office, or a four-poster bed filling a smal bedroom to capacity, but these discoveries are rar like the text-book case in a doctor's day.

The population, too, has changed. The better-o people are yearly moving further away from th encroaching sea of small villas, with its concomitant the 'buses, trams, and coaches, and only those remai whose profession or business makes it a necessity t live near town—a few perhaps for the sake of school for the children. Because of this the practitione has to work harder for the same income. Two visit must be paid instead of one for the same fee, but i does not mean that the hours are twice as lon because houses are now much closer together an as the patient is often as busy as the doctor ther is less ceremony and waste of time in small tal Until the last few years we only had a few pensione and club patients, but the number of the latter ha been swelled considerably since the spread unemployment. If this is to continue a system insurance for dependants would benefit doctors much as patients. Amongst other changes is t growth of the telephone system. It is now qui a rare event to hear the night bell, for call box are numerous and the public expert. Midwife cases are fewer, partly owing to the fall in birth-rat and partly to the inconvenience and publicity "rooms" in a house shared with other famili For this reason many mothers prefer admission a lying-in hospital.

Practice on the urban fringe affords varied oppo tunities for spending one's leisure. For the studio there are post-graduate courses or meetings medical societies which can be regularly attend without putting extra work on one's partner. is quite possible to act as clinical assistant at out-patient department during the afternoon an to be back for the surgery in the evening. F the sportsman there is easy access to Twickenha Lord's, or Wimbledon, with golf, hockey, tenni and swimming at his own back door. Those wh like town life may attend first nights or sympho concerts, while for the country lover there are other joys, not half an hour from home.

Altogether a good place to live and work in.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Capt. L. M. Morris is placed on the retd. list.

The following appointments are notified: Surg. Comdr. F. C. Hunot to *Ganges*, for R.N. Sick Quarters, Shotley. Surg. Lt.-Comdrs. R. W. Higgins to *President*, for course; D. A. Newbery to *Pembroke*, for R.N.B., Chatham, and to *Renown*; and T. B. Lynagh to *Dolphin*. Surg. Lt. W. J. M. Sadler to *Pembroke*, for R. M. Infirmary, Deal.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt. G. H. Sellars to *Renown*.

ROYAL ARMY MEDICAL CORPS

Capt. E. H. Hall, from the secd. list, is restd. to the estab.

J. N. Concannon to be Lt. (on prob.).

TERRITORIAL ARMY

J. E. Morrison (late Offr. Cadet Edin. Univ. Contgt., Sen. Div., O.T.C.) to be Lt.

INDIAN MEDICAL SERVICE

Lt.-Col. (Bt. Col.) E. C. Hodgson to be Col.

Capt. M. Rodrigues relinquishes his temp. commn.

NAVAL MEDICAL COMPASSIONATE FUND

A meeting of the subscribers of the above fund will be held at 3 P.M. on April 19th next, at the Medical Department of the Navy, Admiralty, S.W., to elect six directors of the fund.

My chief reason for writing to you is that a short ime ago I came across an instrument that to me was unique, one that checks its own readings with an ordinary sphygmomanometer and anyone could earn to use successfully in a few minutes.

Briefly, it is as follows. There is the usual armlet o which is attached an ordinary manometer—not a mercurial one, unfortunately. A bracelet with an efficient tambour for the brachial artery is provided. A stethoscope is also supplied, and this one couples up with the tambour by means of a Y-piece. Coupled up with the manometer by a rubber tube is an oscillometer; on this there is, of course, an interrupter. According to the oscillations of the needle, one can read off *on the manometer* the three pressures—systolic, mean, and diastolic. The figures on the oscillometer mean nothing apart from allowing one to measure the size of the deflections.

The chief value of the instrument is, in my opinion, the ease with which one can estimate the mean pressure; the systolic and diastolic can be estimated by any manometer. It is made at the Laboratoire du Detensyl at Nice, the British agents being Continental Laboratories, Ltd. It is very well got up, and is carried in a light leather case, and the price is low—£3. I am, Sir, yours faithfully,

A. GRAHAM-STEWART.

Ulster-place, N.W., March 18th, 1933.

THE INTIMATE NATURE OF NERVOUS ACTIVITY

To the Editor of THE LANCET

SIR,—Your leading article (March 18th, p. 589), written, no doubt, with high authority, contains some statements which are difficult for the non-expert reader to understand. It is said that the passage of a nervous impulse "is followed at once by a refractory period . . . Hence summation of impulses is impossible—for at the moment during which one impulse is occupying the wire another cannot be added to it." Surely it is not suggested that summation is, or would be, produced by the *simultaneous* passage of a number of impulses along a nerve fibre. It was shown by Keith Lucas that, if a region of decrement—that is, a region in which conduction is difficult—is introduced into the course of a nerve-fibre, nervous impulses undergo a progressive diminution in intensity in their passage through that region, until eventually they may be extinguished. But, if a nervous impulse manages to survive its passage through the region of decrement, it emerges on the other side in full intensity regardless of the strength of the stimulus which originated it, or of the amount of diminution which it has undergone. Further, the passage of a nervous impulse is followed by a period during which conductivity is diminished (the "refractory period"), and this, in turn, is followed by a period during which conductivity is increased (the "supernormal phase.") If successive nervous impulses are timed so that each one after the first falls within the refractory period of the one which preceded it, a complete block may be established so that no impulses are able to pass through the region of decrement. But, if the impulses are timed so that each one arrives during the period of increased conductivity which follows the preceding one, it becomes eventually possible for impulses to pass through the region of decrement, and, as already noted, they emerge on the other side in full intensity. This, surely, is what is meant by the "summation" of nervous impulses.

There is a strong presumption that the same processes occur in the case of the nerve-cell. It is true that in Keith Lucas's experiments the region of decrement in nerve-fibre was produced by artificial means. It is probable that the nerve-cell is more susceptible than the nerve-fibre to natural diminution or increase of conductivity, possible, as you suggest, by the action of hormones or "humoral stimuli." And it is more than probable that the natural regions of variable conductivity in the nervous system are situated mainly at the synapses and junctional tissues. But it is not at all evident (to the uninitiated) that "the nature of the processes in those two parts of neural tissue (the nerve-fibre and the nerve-cell) is different." One would also like to know whether there is any evidence that *an* impulse arriving at *the same* ganglion cell may either arrest activity or stimulate it: and, lastly, why inhibition is not "comparable with the refractory phase of nerve transmission"?

These remarks are not made in any spirit of captious criticism. Keith Lucas, one of the most brilliant scientists that I have ever known, had a shrewd conviction that the processes of conduction in the central and in the peripheral nervous system would be found to be fundamentally of the same nature. If this be true, there is good reason to hope that much may yet be learnt from the comparatively simple study of the processes in peripheral nerve. "If the central nervous system involves processes which are entirely unknown in peripheral nerve, then the analysis of peripheral conduction loses a great deal of its interest and the problem of central conduction becomes infinitely more formidable" (Keith Lucas).

It will be noted that Prof. Hill's work (quoted in your article) is concerned entirely with processes occurring in peripheral nerve.

I am, Sir, yours faithfully,

A. S. BLUNDELL BANKART.

London, W., March 21st, 1933.

PUBLIC HEALTH SERVICES

Ministry of Health on Local Expenditure

THE comments of the Minister of Health on certain sections of the report of the Committee on Local Expenditure[1] have been issued in Circular 1311,[2] addressed to local authorities. The general soundness of the principles on which the committee based their concrete proposals, and indeed of many of the proposals, is not questioned, but the Minister points out certain considerations which must not be ignored. The most important of these is that the public health service cannot be static; some measure of development and new expenditure is inevitable as fresh needs become manifest. Outstanding instances, he says, include maternity and child welfare, in respect of which few authorities have yet established a complete service; and in some remaining areas, where this is desirable on public health grounds and also feasible, the appropriation of poor-law infirmaries. In all such matters of development the need for economy must be weighed against the urgency of the suggested public health development. Among the recommendations of the committee to which local authorities are asked to give special attention are those advocating better coöperation in regard to infectious diseases hospitals, the more careful selection of patients sent to sanatoriums, the shortening of the routine period of isolation for uncomplicated cases of scarlet of digestive functions have been the only definite symptoms. Each had been examined clinically by several doctors. Gastro-intestinal function had been investigated chemically and radiologically, and the symptoms had been attributed to "functional" causes. After many months had elapsed, and different doctors had been consulted, the underlying basis of the symptoms—viz., pulmonary tuberculosis—was revealed by radiographic examination of the chest. On admission the blood sedimentation-rate was in each case appreciably increased above normal, and examination of the radiograms of the chest showed that the pulmonary disease was at least of several months' duration. It would appear probable that, had the first clinical examination been completed by an estimation of the sedimentation-rate, a toxæmic cause for the symptoms would have been definitely established, and radiographic examination of the chest recommended many months before it was actually done.

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[1] See THE LANCET, 1932, ii., 1238.

[2] H.M. Stationery Office. 2s. 6d.

In conclusion, owing to the fact that a number of patients who have had serofibrinous pleurisy develop active pulmonary tuberculosis within a few years, attention should be paid to the sedimentation-rate during convalescence from the pleural effusion; this in particular to determine the length of convalescence required, and to regulate the patient's activities. Further, such patients should be warned to return for examination should they notice any departure from normal health, and sedimentation estimations will be found of value in these periodic examinations. My experience suggests that in the majority of cases where pulmonary tuberculosis develops after pleural effusion, the sedimentation-rate has not settled to normal, and that, in spite of this indication of the smouldering of the disease, the patient's activities have been insufficiently limited.

I am, Sir, yours faithfully,
HILARY ROCHE.

The British Sanatorium, Montana, March 16th, 1933.

THE COCKTAIL IN HYPOGLYCÆMIA

To the Editor of THE LANCET

SIR,—In the leading article on Spontaneous Hypoglycæmia in THE LANCET of March 11th (p. 533) it is suggested that the wide popularity of the cocktail before a meal is in part due to the relief of hypoglycæmia which it brings. This may give rise to the impression that it is the alcohol in the cocktail that "does the trick." Recent work by Edkins, Murray, and Hunt points to the fact that alcohol tends to produce a hypo- rather than a hyper-glycæmic condition. The two former workers have shown (*Jour. of Physiol.*, 1931 and 1932) that in normal human subjects alcohol with glucose decreases the degree and duration of hyperglycæmia, and that small doses of alcohol given to normal human beings lower the blood-sugar slightly. T. C. Hunt (THE LANCET, 1930, i., 121), dealing with alcohol given to diabetics, refers to experiments by others showing that alcohol tends to reduce rather than increase blood-sugar, and speaks of the action of alcohol as "such insulin-like action." There may be differences of opinion with regard to the value of a cocktail, but it should be clearly understood that whilst the glucose in a drink might possibly help, the alcohol (and in a cocktail it is present in a high percentage) will more likely increase than decrease the hypoglycæmia.

I am, Sir, yours faithfully,
COURTENAY C. WEEKS.

Beckenham, March 15th, 1933.

TREATMENT OF ENLARGED TONSILS IN CHILDREN

To the Editor of THE LANCET

SIR,—I have read the article by Mr. T. B. Layto in your issue of March 11th with some surprise The conclusion Mr. Layton arrives at is that the grea indication for operation is the history of recurrin follicular tonsillitis. This however, he states, rarel occurs in small children. Therefore removal o tonsils in children up to 5, 6, 7, 8 years of age shoul not be done unless it can possibly be helped.

He says, however, that instead of developin recurring tonsillitis these children are subject t "droplet infection giving them an inflammation o the upper respiratory tract," and that later o tonsils which are primarily filters for holding organism and factories for the production of immune bodie instead of resisting invasion become themselves th cause of trouble and are a source of sepsis, but tha in spite of this they should not be removed unless the rare complication of recurring tonsillitis should occur. This amounts to saying that the child is to keep up to 12 years of age a septic focus, giving rise to a chronic infection both local and general, because the lymphoid tissue in the pharynx (of which the tonsil is only a part) is necessary to the child's development. As a school medical officer I see hundreds of children every year, and in conjunction with many of my colleagues in other areas I am firmly convinced that the conclusions above arrived at are not supported, judging by the beneficial results one sees from the effect of early operation on children with enlarged septic tonsils. As school medical officers who advocate operation appear to have come under some criticism in the Report of the Chief Medical Officer of the Board of Education for 1931 I have written a fairly full account of this subject for my committee in my report for 1932.

The conclusions I put forward are: (1) lymphoid tissue is primarily protective; (2) this tissue when exercising its protective function becomes enlarged; (3) if the infection is overcome the swollen tissue will again subside; (4) if the resistance of the tissue and the individual is low, enlargement will persist; (5) the persistence of enlargement means the presence of a septic focus; (6) chronically enlarged tonsils must have lost any beneficial action they may have ever possessed and must be regarded as a source of danger immediate and remote; (7) such septic foci ought to be removed. This is no attack on a normal structure of the body but upon a diseased organ.

The particular point I wish to emphasise is that it is high time the medical profession threshed this matter out and came to some agreement, as otherwise our differences are likely to be a source of derision among the lay public. To operate or not, that is the question; and one answer only can be correct.

I am, Sir, yours faithfully,
W. W. JEUDWINE, M.D.,

March 20th, 1933. School Medical Officer, Newport, I.W.

OSCILLOMETRY AND THE "MEAN" PRESSURE

To the Editor of THE LANCET

SIR,—I was greatly interested in your annotation on this subject. I feel sure that the estimation of this mean pressure is of much greater value than has hitherto been realised. French workers have laid stress on this for some time now, and in this country Dr. J. F. Halls Dally has done the same. With the Pachon type of instrument I have never been particularly happy—possibly my own faulty technique.

y chief reason for writing to you is that a short ime ago I came across an instrument that to me as unique, one that checks its own readings with n ordinary sphygmomanometer and anyone could arn to use successfully in a few minutes.

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OBITUARY

ARTHUR COOKE, M.B., B.Ch. Oxf., F.R.C.S. Eng.

WE announced last week the death of Mr. Arthur ooke, surgeon to and surgeon in charge of the phthalmological department at Addenbrooke's ospital, Cambridge. This occurred on Monday, arch 13th, at his house, Grove Lodge, Cambridge, fter a brief illness, the sudden termination to which as unexpected.

Arthur Cooke was the son of Henry James Cooke, Bradford, and was in his 65th year. He was ducated at Giggleswick and New College, Oxford, d after taking honours in the Natural Science chools proceeded for his medical training to the London Hospital. He graduated M.B., B.Ch. Oxf. in 1895 and almost immediately took up practice in Cambridge as surgical partner to a well-known firm. During the war this partnership was dissolved and afterwards Mr. Cooke practised as a consultant. In 1898 he was made an M.A. Camb. and in the same year obtained the diploma of F.R.C.S. Eng.

MR. COOKE

Prior to the war Cooke was a major in the Territorials, and at the outbreak ostilities he served on the staff of the First Eastern eral Hospital. He soon went to France where he attached as a surgeon to various military hospitals, at the close of hostilities was a Lieut.-Colonel in R.A.M.C. At the end of the war he became sident of a joint organisation of the Y.M.C.A. the C.E.Y.M.S., and was responsible at Cambridge the formation of a panel of blood donors, composed members of the Y.M.C.A., which was attached to lenbrooke's and which still functions.

o Addenbrooke's Cooke was a devoted servant. became assistant surgeon to the institution nearly years ago, and having already specialised in thalmic work he was placed in charge of the thalmic department of the hospital on the retirement of the late George Wherry. On becoming surgeon to the hospital he was appointed teacher urgery at the University, and at various times d as an examiner for the medical degree. He also one of the most active movers for the recent nsion of the hospital. As a member of the eal and propaganda committees and an active ker on various subcommittees, he spoke assiduously many centres in the county in support of the ement, and last year he saw the realisation of of his principal objects—namely, the completion e new eye wards.

colleague writes of Arthur Cooke and his hospital k in words which may be quoted in full. "Above hat he achieved," he says, "Arthur Cooke had lities which bound him to all with whom he came ontact. It would be difficult to find a more loyal, energetic, and enthusiastic colleague on a hospital staff. As senior surgeon to the hospital and surgeon in charge of the eye department he did the work of two men, and it was only his boundless keenness that made this possible. He never spared himself and certainly never seemed to want to. At the end of a long out-patient morning, the way in which he would apply himself with zest to the examination and discussion of a fresh case was characteristic of all his work. He rarely appeared tired and always seemed to enjoy his work so that to consult him was a pleasure. His surgical technique reached a very high standard and this was maintained up to the time of his death. Perhaps he excelled most in gastric surgery, and some of his colleagues will always remember the faultless technique displayed at a particular gastrectomy which he performed about three months ago. In spite of an enormous amount of routine work he found time to read widely and keep up to date, and was continually improving both his own methods and the work of the hospital by meticulous attention to detail. In this respect he remained always young and a stimulus to all who worked with him. In addition to his hospital work he had a very large practice as a consulting surgeon. On the administrative side his personality and charm smoothed over many difficulties. He always seemed to know exactly how far the opposition would allow him to go. If he were held up temporarily his tact and friendliness usually took him a good deal further ultimately. This power was one of the biggest factors which brought to completion the extensive scheme for enlarging Addenbrooke's, and it is probable that the raising of the £85,000 obtained for this purpose would never have been attempted but for his leadership and charity. In the face of a great loss it is pleasant to think that he saw the hospital of his dreams, in buildings and equipment at any rate, standing almost complete before he died."

The activities referred to in the quotation above should be enumerated. Cooke was a member and ex-president of the Cambridge Medical Society and an active supporter of the work of the B.M.A., at one of whose annual meetings he had been president of the surgical section. He was chairman of the house committee of the Evelyn nursing-home, and consulting surgeon to the Papworth Village Settlement, the Rous Memorial Hospital at Newmarket, and the Royston Cottage Hospital. He was also a distributor under Crane's Charity, a fund which assists undergraduates of the University in the payment of medical and nursing fees, and had interested himself in the life insurance of the students. He was the author of a sound elementary text-book on surgery, and of various contributions to medical journals.

In private life Arthur Cooke was a man of varied activities. At Oxford he obtained his blue for cross-country running, and both there and at the London Hospital was a prominent footballer. He was a fine skater, president of the University skating club and medallist of the National Skating Association. He had been captain of more than one golf club, he sailed his boats regularly on a Norfolk Broad, and was among the earliest drivers of a motor-car in the neighbourhood.

Mr. Arthur Cooke married in 1891 Lucy, only daughter of the late Mr. John Collyer of Edgbaston, and leaves a widow, a daughter, and two sons; his eldest son was a victim in the *Vanguard* disaster at fever, the treatment of mild cases of scarlet fever at home, the practice of terminal disinfection, and the reservation of institutional treatment to those who cannot be treated otherwise.

Birth- and Death-rates in Northern Ireland

Although, according to the report of its Registrar-General,[3] the birth-rate of Northern Ireland in 1931 was, with one exception, the lowest recorded since 1901, it still enjoys the distinction of being the highest in the British Isles. At 20·5 per 1000 of the estimated population it is some 30 per cent. higher than the present rate of England and Wales (the comparison is of crude rates, but the proportion of the population in the two countries that is made up of women at the child-bearing ages does not differ appreciably, and measurement of the rates as births per 1000 women aged 15 to 45 years would give approximately the same result). In 1901–05 the birth-rate in England and Wales was 28·2 per 1000 living at all ages, and save for the exceptional post-war period it has practically never ceased to fall; by 1926–30 it had fallen as low as 16·7 per 1000, or 59 per cent. of its value at the beginning of the century. In Northern Ireland, on the other hand, reading from one of the diagrams included in this report, the rate in 1901–05 was about 25 per 1000—i.e., *below* the English rate; by 1926–30 it had declined to only 21 per 1000 and was therefore still over 80 per cent. of its value at the beginning of the century. For the years 1928–31 it has remained practically stationary at 20 to 21 per 1000. One possible explanation of this relatively high rate is the restrictive influences of Catholic principles, but in opposition to this it will be remembered that W. T. Russell found, in his careful study of Irish fertility,[4] that the fertility in the counties of Antrim and Down, including the borough of Belfast, had declined only 8 per cent. during the 40 years 1871–1911 as compared with 30 per cent. in rural Wales; and in these two counties the Catholic population, he concluded, comprised at the utmost only 25 per cent. of the total. From 1928 to 1931 this report of the Registrar-General shows that the highest birth-rates of Northern Ireland are to be found in the two county boroughs, Belfast and Londonderry (as the calculation is based upon the populations at the census of 1926 these rates would be overstated if there has been any expansion of these areas in the last five years).

Turning from the birth-rates to the death-rates it will be noticed that the latter for Northern Ireland compare in one respect very curiously with those of England and Wales. Comparison of the standardised rates for all causes shows that the males of the two countries do not differ very appreciably in their mortality; in 1931 the Northern Ireland rate was 11·7 per 1000 and the England and Wales rate was 11·4; for the five years 1927–31 the rate in Northern Ireland was 12·0 per 1000, in England and Wales 11·6. The males suffer a slightly higher rate of mortality in Northern Ireland, but the difference in the last few years is quite slight. Females in Northern Ireland, on the other hand, show an appreciably higher rate than their cousins over the water. In 1931 the standardised rate for females was 11·2 per 1000 in Northern Ireland, 9·2 in England and Wales; in 1927–31 it was 11·4 in the former compared with 9·3 in the latter. Whereas the ratio of the female to the male death-rate is only about 81 per cent. in England and Wales, it is about 95 per cent. in Northern Ireland. In fact, calculation of death-rates at ages (on the basis of population at the 1926 census) from the absolute numbers of deaths set out in this report shows that in 1931 the female mortality was appreciably higher than the male mortality at ages 15 to 45, and at most other ages differed from the male mortality by considerably less than is found in England and Wales. According to the rather limited data available in this report—i.e., for the one year 1931—females compared with males suffered unduly high death-rates in Northern Ireland from influenza, tuberculosis of the respiratory system, bronchitis, cerebral hæmorrhage, embolism and thrombosis, and chronic endocarditis and valvular disease. This report only provides the raw materials and offers no clue to the origin of this very noticeable feature of the mortality. Perhaps it should be sought, at least in part, in the proportion of women occupied in the linen mills.

The tuberculosis death-rate, as a whole, has declined quite as steadily in Northern Ireland as in England and Wales, but its level is still appreciably above tha of the latter country among young adults. Between the ages of 15 and 25 tuberculous diseases caused, in 1931, more than 500 deaths in every 1000. The crude cancer death-rate, on the other hand, is appreciably below that of England and Wales, but as 8 per cent. of all deaths in Northern Ireland were in 193 uncertified, and in allocation of cause of death 11 per cent. of all deaths were ascribed to senility, there can be little doubt but that the true rate is understated. During this century there has been a slight increase in the population (in contradistinction to the continual fall in the nineteenth century), but 1931 is the first year in the history of Northern Ireland as a separate administrative unit in which there has been recorded a net migration movement inwards.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDE
MARCH 11TH, 1933

Notifications.—The following cases of infectiou disease were notified during the week:—Small-pox, 15 (last week 9); scarlet fever, 1846; diphtheria, 839; enteric fever, 25; acute pneumonia (primary or influenzal), 1299 (last three weeks 2228, 1436, 1362); puerperal fever, 43; puerperal pyrexia, 101; cerebro-spinal fever, 74; acute poliomyelitis, 3; encephalitis lethargica, 13; continued fever, 2 (Northwich R.D., Chester, and St. Thomas R.D., Devon); dysentery, 21; ophthalmia neonatorum, 98. No case of cholera, plague, or typhus fever was notified during the week.

The notifications of acute pneumonia, primary or influenzal were still below the expected number by 31 per cent. in England and Wales and 20 per cent. in the County of London.

The number of cases in the Infectious Hospitals of the London County Council on March 14th–15th was as follows: Small-pox, 52 under treatment, 3 u week 52 and 2 respectively); scarlet f 1581; enteric fever, 8; measles, 302; puerperal fever, 23 (plus 10 babies); 231; poliomyelitis, 2; “other diseases,” 403. At S Margaret's Hospital there were 18 babies (plus 12 mothers with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London there was no death from small-pox or enteric fever 35 (0) from measles, 6 (2) from scarlet fever, 44 (1 from whooping-cough, 29 (5) from diphtheria, 54 (1 from diarrhœa and enteritis under 2 years, and 157 (2 from influenza. The figures in parentheses are those for London itself.

No great town reported more than 8 deaths from influenza. The column of typhoid and paratyphoid fevers is blank. Eight deaths from measles occurred at Liverpool, 3 each Birmingham, Cardiff, and Newport. Whooping-cough accounted for 4 deaths each at West Ham and St. Helens.

The number of stillbirths notified during the week was 286 (corresponding to a rate of 41 per 1000 total births), including 49 in London.

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[3] Government of Northern Ireland. The Registrar-General's Annual Report of Births, Deaths, and Marriages for 1931.

[4] Metron, 1928, i., 101.

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Essex County Council Bill

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HOUSE OF COMMONS

WEDNESDAY, MARCH 15TH

Tuberculosis in the Navy

Bertram Falle asked the First Lord of the Admiralty number of naval ratings invalided during the year 1st to Dec. 31st, 1932; the total number invalided tuberculosis during this period; and the number ided with tuberculosis whose disability was accepted ttributable to service.—Sir Bolton Eyres-Monsell d: The number of naval ratings and Royal Marines ided during the year 1932 was 979. The number ided during that period with pulmonary tuberculosis 199, and in 148 of these cases pensions were granted e attributable scale.

Smell of Sewage at Chiswick

Mitchell asked the Minister of Health whether he inquired into the complaints received from residents in wick with regard to the odour arising from the Chiswick ge works; and, if so, whether he proposed to take any in the matter.—Mr. Shakespeare (Parliamentary tary to the Ministry of Health) replied: My right hon. d is investigating these complaints and is in close with the council as to the measures to be taken. hoped that a remedy will shortly be found.

THURSDAY, MARCH 16TH

Health Insurance Medical Benefit

Banfield asked the Minister of Health whether he aware that in June next many unemployed persons d be in arrears as members of their approved societies the National Health Insurance Acts; that sums up to would have to be paid to clear these arrears; that in y cases payment of these arrears would not entitle the ns concerned to health benefits on account of not g been employed for a considerable time in an insurable pation; and that, owing to the complexity of the law, y of them were ignorant of their position; and whether would take steps to avoid the hardship which would .—Sir E. Hilton Young replied: The cases to which hon. Member refers arise under the provisions of the onal Health Insurance Act, 1932. These were fully ined when the Bill was before the House and all ed persons were informed of the changes by a leaflet d at the end of last year. All possible steps are being n to ease the position for the insured persons affected, arrangements have been made under which arrears to unemployment may be redeemed by instalments y time from now to the end of November next.

Rural Housing

Percy Hurd asked the Minister of Health whether ontribution of £1 per house payable by a county council Section 34 (2) of the Housing Act, 1930, towards the ision of a house for a member of the agricultural population in a rural district applied to the case of rehousing under arance or improvement scheme; what in that event the total weekly rent equivalent of the assistance inable under the Act for slum clearance; and whether s would be taken to make this position more widely n among county and district authorities.—Sir E. on Young replied: The reply to the first and third of the question is in the affirmative. For each three-oomed house provided under the Act the total of the ributions under the Act is approximately equivalent weekly sum of 5*s*. If the house is in an agricultural h the weekly equivalent is 5*s*. 6*d*.

Voluntary Contributors

David Grenfell asked the Minister of Health whether, nnexion with any forthcoming extension of voluntary ributions to national health insurance, and in view of the numbers of previous contributors who have been forced ave insurable occupations, he would consider giving em an opportunity to regain membership by payment oluntary contributions, as was provided in the Act of , for the provision of widows' and orphans' old age ion benefit to insured contributors.—Sir E. Hilton Young replied: No extension of the scope of voluntary insurance under the National Health Insurance Acts is in prospect, and therefore the remainder of the question does not arise. The persons to whom the hon. Member refers have for the most part already had an opportunity of becoming voluntary contributors under existing legislation.

MONDAY, MARCH 20TH

Death at Wrestling Contest

Mr. Clyde Wilson asked the Home Secretary whether his attention had been drawn to a fatality which occurred at an all-in wrestling contest at Sheffield, and the fact that similar contests were taking place in many parts of the country; and whether he would amend the law so as to enable local licensing authorities to regulate and control this form of entertainment.—Sir J. Gilmour replied: I have seen a reference to this contest in the press and I am making inquiry into the circumstances. I have no information that similar contests are frequent and I am not at present in a position to say whether any amendment of the law is necessary.

TUESDAY, MARCH 21ST

Milk for Expectant Mothers

Miss Rathbone asked the Minister of Health whether he was aware that analysis of the reports of the medical officers of health showed that only about half of the county councils and about a fourth of the borough councils exercised their power to provide milk for expectant mothers during the last three months of pregnancy and during lactation; and whether, in view of the high maternal mortality-rate and the privation being suffered by many mothers owing to their husbands' unemployment, he could take steps to urge on local authorities that they should all put this power into operation.—Mr. Shakespeare (Parliamentary Secretary to the Ministry of Health) said that information available to the Department indicated that such provision was made by at least 80 per cent. of the county and borough councils. There was much variation in the use that was made of the milk, but the Minister of Health did not think that the issue of a circular, on the general provision made, would be useful. Action was taken in individual areas where his right hon. friend was satisfied that it was necessary.

Chemical Treatment of Sewage

Mr. Kirkwood asked the Secretary for Scotland whether, in view of the complaints of the Clydebank Town Council and other local authorities regarding the action of the Glasgow Corporation in suspending, for reasons of economy, the chemical treatment of sewage entering the river Clyde at Dalmuir, he would request the Glasgow Corporation to reconsider the decision, in view of the danger to public health caused by the suspension of chemical treatment.—Mr. Skelton (Parliamentary Under-Secretary of State for Scotland) said that the Department of Health for Scotland had received no complaints regarding the action of the Glasgow Corporation in suspending the chemical treatment of sewage entering the river Clyde from the sewage works at Dalmuir, and he was informed that the medical officer of health of Glasgow was of opinion that there had been no danger to public health arising from the action taken. The matter was, however, considered by the Corporation on the 16th inst., when they approved a recommendation that provision should be made in their next year's estimates for the resumption of the chemical treatment of the sewage at the sewage works as from June 1st, 1933.

Vaccination and Death Certificates

Mr. Groves asked the Minister of Health how many death certificates were received during 1932 on which vaccination or vaccinia was mentioned as a cause of death; and the ages of the persons to whom those certificates referred.—Sir E. Hilton Young (Minister of Health) said that three such certificates were received in 1932. The ages of the deceased persons were 3 months, 5 months, and 6 months, respectively. In addition, there were five cases in which the practitioner had entered vaccinia or vaccination as one of the causes of death, but where in the course of the customary inquiries it was ascertained that neither vaccinia nor vaccination had contributed to the fatal issue, and the original certificate was withdrawn.

Milk Marketing

Mr. Leonard asked the Secretary for Scotland whether the report covering the inquiry into the Milk Marketing (Scotland) scheme had been prepared; and whether it was intended to publish it, and when.—Sir G. Collins (Secretary of State for Scotland) said that the answer to the first part of the question was in the affirmative. He had considered the report and hoped to be in a position to submit the scheme to Parliament at an early date; but he did not propose to publish the report.

Scapa Flow. The funeral service at Great St. Mary's Church, Cambridge, was attended by a great concourse of his professional and University colleagues, the representatives of many colleges, and friends.

MONTAGU LOMAX, M.R.C.S. Eng., L.R.C.P. Edin.

THE death is announced at Windlesham House, Shoreham-on-Sea, on Friday last, March 17th, of Dr. Montagu Lomax, who was associated prominently some years ago with the National Society for Lunacy Law Reform. He received his medical education at Edinburgh and St. Bartholomew's Hospital, and obtained his qualification in 1883. He was in practice for a time in New Zealand and was honorary medical officer to a hospital at Canterbury. Later he was assistant medical officer at Prestwich Asylum, b was not a regular member of the asylum medic service. He was however in temporary employm at two asylums during the war, and his life in th institutions impelled him to write a book entitl "Experiences of an Asylum Doctor." This sensatio book played a part in the institution of a departme committee appointed to inquire into the administ tion of the mental hospitals, but Dr. Lomax decli to give evidence personally before the committ On the appearance, however, of the report of t Committee he wrote a reply to it which appeared a pamphlet. The report was admitted on all hands be a fair and well-reasoned document in which cert legitimate criticisms of the administration found th place, and in so doing supported some of Dr. Loma statements, but his general allegations were refuted.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Pharmacy and Poisons Bill

IN the House of Lords on March 16th the Pharmacy and Poisons Bill was agreed to on Report.

Health in the Villages

In the House of Commons on March 15th, on a motion calling attention to the plight of rural industries, Dr. O'DONOVAN said that if village life and village industries were to prosper there must be a fostering care on the part of the Government of the village labourer's wife. There could be nothing more disheartening than for a village labourer's wife to come to London and see the lavish social services at the disposal of her sister in the city, and to compare that with the impoverished social services at the disposal of the village labourer's wife. They could see arising in every city expensive buildings, staffed by an expensive body of experts for maternity and sickness, but in the country village the country doctor suffered in contrast with the panel practitioner in the town. The village midwife, too, worked under great difficulties and her returns hardly paid for her existence. To ask rural life to prosper under these conditions was to ask a lot, and he was sure that the Government must give a care to the return to the country of some of the money they took from the rural areas in the form of social services comparable to those received by town dwellers. It might be difficult, but difficult problems should be the test of good administration. If village life was to prosper there must be a complete culture; and in addition to the village parson they must have a first-class village teacher and parish doctor, and, he thought, a squire. There must be leaders in the social, medical, clerical, and teaching world, and then civilisation in the country would be complete and be able to stand against the false blandishments of town life. When men decayed in the villages the country could not prosper. He therefore supported the terms of the motion which asked the Government to give a care to village rural life.

Major ELLIOT (Minister of Agriculture) said that he appreciated the necessity that the services which were available for the town dweller should to some extent be available for the country dweller also. Efforts must be made to see that the rural housewife had access to sources of clean water, and that when she was bearing children she had the same services as those afforded to her sisters in the towns and living nearer to the great centres of medical research and education. The encouragement of rural industries and the maintenance of a pride in village life were, he said, fundamental to the policy of the Government. If they could make life in the country healthy, tolerable, and cultured, they would f people returning there.

General Exchequer Contributions Bill

In the House of Commons on March 16th t Local Government (General Exchequer Contrib tions) Bill was read the third time.

Shop Assistants' Hours

On March 17th in the House of Commons M MORGAN JONES moved the second reading of t Shops Acts (1912 to 1928) Amendment Bill. He sa that in 1930 a Bill limiting shop assistants hou to not more than 48 per week was given a secon reading in the House of Commons and referred to Select Committee, which heard a large number witnesses and presented a report. Many of th Committee's conclusions were embodied in th present Bill. Clause 1 laid down the general princip of a 48-hour week and provided that no young pers might work longer, but that shop assistants over years of age might work more than 48 hours per wee if a local board, composed of employers and employe had agreed to overtime employment and a local ord was in force. The Secretary of State was give power under Clause 6 to fix hours of overtime emplo ment where there was substantial disagreement the local board.

Mr. MITCHESON moved:

> That this House, while recognising the undesirabili of shop assistants working excessive hours, declines to gi a second reading to a Bill which would not only invol local authorities in increased expenditure in securing i enforcement, but would also add to the existing burde on industry by hampering business and increasing the co of distribution, and would be bound to lead either to increase in retail prices or to a reduction in the wages shop assistants.

Mr. HACKING (Under Secretary, Home Office replying for the Government, said that in practi the majority of adults in shops were only workin between 48 and 60 hours a week—an average approximately 54 hours a week. The Governme had sympathy with shop assistants, but this Bill woul entail expenditure on local authorities and on th National Exchequer which could not be afforde at the present time. But apart from the expens the question arose whether the measure was reall desirable. By passing the Bill the House might we damage the taxpayer and the ratepayer withou offering much, if any, benefit to the shop assistan themselves. The Government did not desire, howeve to take up a completely *non-possumus* attitude i regard to the employment of young persons in shop under 18. The present old Act gave inadequat protection to these young persons. The Governmen were at this moment giving close attention to tha aspect of the question, and while he could give n pledge as regarded the introduction of legislatio e subject, at the matter was very tant The Government would oppose the d reading of this Bill. e Bill was talked out.

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e Essex County Council Bill (which provides e licensing of establishments in the county for ge and special treatment, and exempts establish- s carried on by medical practitioners) was second time in the House of Lords on Thursday, 16th. and was referred to a Select Committee.

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THE death is announced at Windlesham House, Shoreham-on-Sea, on Friday last, March 17th, of Dr. Montagu Lomax, who was associated prominently some years ago with the National Society for Lunacy Law Reform. He received his medical education at Edinburgh and St. Bartholomew's Hospital, and obtained his qualification in 1883. He was in practice for a time in New Zealand and was honorary medical officer to a hospital at Canterbury. Later he was assistant medical officer at Prestwich Asylum
was not a regular member of the asylum m
service. He was however in temporary emplo
at two asylums during the war, and his life in
institutions impelled him to write a book e
"Experiences of an Asylum Doctor." This sens
book played a part in the institution of a depart
committee appointed to inquire into the admi
tion of the mental hospitals, but Dr. Lomax d
to give evidence personally before the com
On the appearance, however, of the report
Committee he wrote a reply to it which appear
pamphlet. The report was admitted on all ha
be a fair and well-reasoned document in which
legitimate criticisms of the administration foun
place, and in so doing supported some of Dr. L
statements, but his general allegations were ref

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Pharmacy and Poisons Bill

IN the House of Lords on March 16th the Pharmacy and Poisons Bill was agreed to on Report.

Health in the Villages

In the House of Commons on March 15th, on a motion calling attention to the plight of rural industries, Dr. O'DONOVAN said that if village life and village industries were to prosper there must be a fostering care on the part of the Government of the village labourer's wife. There could be nothing more disheartening than for a village labourer's wife to come to London and see the lavish social services at the disposal of her sister in the city, and to compare that with the impoverished social services at the disposal of the village labourer's wife. They could see arising in every city expensive buildings, staffed by an expensive body of experts for maternity and sickness, but in the country village the country doctor suffered in contrast with the panel practitioner in the town. The village midwife, too, worked under great difficulties and her returns hardly paid for her existence. To ask rural life to prosper under these conditions was to ask a lot, and he was sure that the Government must give a care to the return to the country of some of the money they took from the rural areas in the form of social services comparable to those received by town dwellers. It might be difficult, but difficult problems should be the test of good administration. If village life was to prosper there must be a complete culture; and in addition to the village parson they must have a first-class village teacher and parish doctor, and, he thought, a squire. There must be leaders in the social, medical, clerical, and teaching world, and then civilisation in the country would be complete and be able to stand against the false blandishments of town life. When men decayed in the villages the country could not prosper. He therefore supported the terms of the motion which asked the Government to give a care to village rural life.

Major ELLIOT (Minister of Agriculture) said that he appreciated the necessity that the services which were available for the town dweller should to some extent be available for the country dweller also. Efforts must be made to see that the rural housewife had access to sources of clean water, and that when she was bearing children she had the same services as those afforded to her sisters in the towns and living nearer to the great centres of medical research and education. The encouragement of rural industries and the maintenance of a pride in village life were, he said, fundamental to the policy of the Government. If they could make life in the country healthy, tolerable, and cultured, they woul
people returning there.

General Exchequer Contributions Bill

In the House of Commons on March 1
Local Government (General Exchequer Co
tions) Bill was read the third time.

Shop Assistants' Hours

On March 17th in the House of Commo
MORGAN JONES moved the second reading
Shops Acts (1912 to 1928) Amendment Bill.
that in 1930 a Bill limiting shop assistant
to not more than 48 per week was given a
reading in the House of Commons and refer
Select Committee, which heard a large nun
witnesses and presented a report. Many
Committee's conclusions were embodied
present Bill. Clause 1 laid down the general p
of a 48-hour week and provided that no young
might work longer, but that shop assistants
years of age might work more than 48 hours p
if a local board, composed of employers and em
had agreed to overtime employment and a loc
was in force. The Secretary of State was
power under Clause 6 to fix hours of overtime
ment where there was substantial disagreem
the local board.

Mr. MITCHESON moved:

> That this House, while recognising the undes
> of shop assistants working excessive hours, declines
> a second reading to a Bill which would not only
> local authorities in increased expenditure in secu
> enforcement, but would also add to the existing
> on industry by hampering business and increasing
> of distribution, and would be bound to lead eith
> increase in retail prices or to a reduction in the
> shop assistants.

Mr. HACKING (Under Secretary, Home
replying for the Government, said that in
the majority of adults in shops were only
between 48 and 60 hours a week—an ave
approximately 54 hours a week. The Gove
had sympathy with shop assistants, but this Bill
entail expenditure on local authorities and
National Exchequer which could not be a
at the present time. But apart from the e
the question arose whether the measure was
desirable. By passing the Bill the House mig
damage the taxpayer and the ratepayer
offering much, if any, benefit to the shop ass
themselves. The Government did not desire, ho
to take up a completely *non-possumus* attit
regard to the employment of young persons in
under 18. The present old Act gave inad
protection to these young persons. The Gover
were at this moment giving close attention t
aspect of the question, and while he could g
pledge as regarded the introduction of legis

London Homœopathic Hospital

At last week's annual meeting it was reported that the extensions had been completed at a cost of £21.633, and the total number of beds increased to 200. There was a deficit on the year of £2582.

A Children's Hostel

The Queen last week opened the new hostel and nursing school of the National Children Adoption Association at Sydenham Hill, which has accommodation for 40 babies and 20 nurses.

St. Andrew's Hospital, Dollis Hill

Last year this hospital, which is chiefly for the professional and middle-classes, received 1253 in-patients. More than 420 out-patients, accidents, and other urgent cases were dealt with, although the hospital has no special out-patients' department. The accumulated deficit of nearly £3000 was paid off by an anonymous gift, but the total liability, including the debt on the first portion of the nurses' home, the new pavilion, &c., is about £9250.

New Hospital at Lahore

Lady Willingdon recently opened the final portion of the new Lahore hospital for women and children, which is named after her. The building has been under construction since 1925, and has been opened in sections; it has cost £90,000. There are 64 beds, and in its design and equipment the hospital is the most modern in India; last year there were *1800* in-patients. Last week's ceremony was the opening of the main operating block, fitted with an air-conditioning plant which dispenses with fans in summer and fires in winter.

Royal Free Hospital

At the annual meeting last week Lord Riddell, the president, stated that last year the hospital treated 5903 in-patients and 50,515 out-patients, including children attending the dental clinic. Thanks to windfalls income exceeded expenditure by about £8000, but there is an overdraft on general accounts exceeding £30,000, and maintenance costs £100,000 a year. The dental clinic has made great progress, and the opening of the whole of the wards for tonsil, adenoid, ear, and throat cases, which will add another 25 beds, is now contemplated. An arrangement has been made to provide £12,000 a year for ten years for the maintenance of the dental clinic.

Progress of Cremation

The setting up of a National Council for the Disposition of the Dead was announced at the annual meeting of the Cremation Society in London on March 15th, when it was stated that the need for an authoritative body representative of all interests concerned has long been felt, especially in view of the increasing difficulties of local authorities in finding land suitable for cemeteries. The annual report of the Society stated that during the past year two new new crematoria had been opened, bringing the total in the country to 24, while the number of cremations had increased by 21 per cent., giving a total of 6315. The number of cremations had trebled in the last ten years and the society was convinced, from the ever-increasing demand for information received from municipal and other authorities, that the advance would be more rapid in the near future. The facilities for cremation at reduced fees offered by most cremation authorities to those insured under the National Health Insurance Acts, and their dependants, had brought cremation within the reach of many who might have been deterred from it from reasons of economy, or who were under the inpression that cremation was more expensive than earth burial. Apart from questions of transport the cost of cremation compares favourably, it is stated, with ordinary burial.

Medical Diary
was set up

NORTH-WEST LONDON MEDICAL SOCIETY.

Tuesday, March 28th.—9.30 P.M. (at 110, Walm
N.W.), Dr. T. C. Hunt: Recent Advance
Medicine, to be followed by a discussion.

LECTURES, ADDRESSES, DEMONSTRATIONS,

FELLOWSHIP OF MEDICINE AND POST-GRADU
MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, March 27th, to Saturday, April 1st.—Beth
Royal Hospital, Monks' Orchard, Eden P
Beckenham, Kent. Tues. and Fri. at 11 A.M. Co
in Psychological Medicine.—Infants Hospital,
cent-square, S.W. Course in Diseases of Inf
Afternoons.—Royal Eye Hospital, St. Geo
circus, S.E. Course in Ophthalmology. Afternoo
Royal Albert Dock Hospital, Royal Albert D
S.E. Week-end Course in Clinical Surgery. All
Sat., April 1st, and Sun., April 2nd.—Nati
Temperance Hospital, Hampstead-road, N.W. T
and Thurs. at 8 P.M. Evening F.R.C.S. Courses.—Ro
Westminster Ophthalmic Hospital, Broad-st
W.C. Thurs., 8 P.M.
in Medical Ophthalmol
by Mr. C. L. Gimblett.
candidates.)

ST. MARK'S HOSPITAL, City-road, E.C.

Thursday, March 30th.—4 P.M., Mr. W. B. Gabri
Injection Treatment of Hæmorrhoids and Anal Fis

CENTRAL LONDON THROAT, NOSE, AND E
HOSPITAL, Gray's Inn-road, W.C.

Friday, March 31st.—4 P.M., Mr. A. Ryland:
scopy.

ST. PETER'S HOSPITAL FOR STONE,
W.C.

Wednesday, March 29th.—3 P.M., Mr. J. Swift J
Vesical Calculi.

NATIONAL HOSPITAL, Queen-square, W.C.

Monday, March 27th.—2 P.M., Dr. Riddoch: Out-pat
Clinic. 3.30 P.M., Dr. Symonds: Head Injuries.

Tuesday.—2 P.M., Dr. Walshe: Out-patient Cl
3.30 P.M., Dr. Symonds: Head Injuries.

Wednesday.—2 P.M., Dr. Martin: Out-patient Cl
3.30 P.M., Dr. James Collier: Clinical Demonstr

Thursday.—2 P.M., Dr. Kinnier Wilson: Out
Clinic. 3.30 P.M., Dr. Riddoch: Heredo-
Nervous Diseases.

Friday.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30
Mr. Elmquist: Demonstration of R
Exercises (in Exercise Room).

WEST LONDON HOSPITAL POST-GRADUATE COLL
Hammersmith, W.

Monday, March 27th.—10 A.M., Medical and Sur
Wards, Skin Clinic. 2 P.M., Eye and Gynæcolo
Clinics. 4.15 P.M., Mr. Gibb: Demonstratio
Eye Cases.)

Tuesday.—10 A.M., Medical Wards. 11 A.M., Sur
Demonstration. 2 P.M., Throat, Nose and
Clinic. 4.15 P.M., Lecture: Mr. Woodd Wal
Peri-anal Problems.

Wednesday.—10 A.M., Medical and Children's W
Children's Clinic. 2 P.M., Eye Clinic. 3.45
Venereal Diseases.

Thursday.—10 A.M., Neurological Clinic. 11.30
Fracture Demonstration. 2 P.M., Eye and Ge
urinary Clinics. 4.15 P.M., Lecture: Dr. Sh
Test-meals.

Friday.—10 A.M., Skin Clinic. 12 noon, Lecture
Treatment. 2 P.M., Throat, Nose and Ear Cl
4.15 P.M., Lecture: Dr. Konstam: Anhæmopo
Anæmia.

Saturday, April 1st.—10 A.M., Medical and Sur
Wards, Children's Clinic.

Daily.—2 P.M., Operations, Medical and Surgical Cl
The Lectures at 4.15 P.M. are open to all Me
Practitioners without fee.

MANCHESTER ROYAL INFIRMARY.

Tuesday, March 28th.—4.15 P.M., Mr. W. R. Doug
Some Surgical Problems of the Colo

Friday.—4.15 P.M., Dr. E. B. Leech: Demonstratio
Medical Cases.

ANCOATS HOSPITAL, MANCHESTER.

Thursday, March 30th.—4.15 P.M., Mr. E. E. Hug
Renal Tumours.

GLASGOW POST-GRADUATE LECTURES.

Wednesday, March 29th.—4.15 P.M. (at the We
Infirmary), Mr. J. G. Tomkinson: Skin Cases.

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At rate of £100.
tal.—H.S. and H.P.
Third Asst. Res. M.O.
dicine.—Independent
Pharmacology. £750.
spital, Gray's-inn-road,
the Heart and Lung
of £100.
£175.
Hospital.—H.S. At rate of
Jin. Assts. for Ear, Nose
pal Hospital.—H.P. Also
£50 respectively.
and Throat Specialist. 50
spital.—Res. Med. and Surg.
Also H.S. £150.
J. Res. M.O. £350.
Rutland Mental Hospital.—
urses of the Chest, Brompton,
rate of £150. Also H.P. and
atorium. Each at rate of £50.
sis, Maida Vale, W.—Res. M.O.
and £100 respectively.

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—Neurolog
. Radiologists
Ophthalmic and Aural Hospital.
oat. At rate of £200.
Hospital, Pendlebury.—Res
rate of £125.
emorial Jewish Hospital.—
Kingsland-road, E.—Sen and Jun
o Two Cas. O.'s. Each at rate
ospital.—H.S. At rate of £150.
upon-Tyne, Hospital for Sick Children.—H.P.
Sen. and Jun. H.S. Each at rate of £100.

Nottingham City Education Committee.—Jun. Asst. Medical Inspector. £500.

Nottingham General Hospital.—H.S. At rate of £150.

Paddington Green Children's Hospital, W.—H.P. and Each at rate of £150.

Plymouth, S. Devon and E. Cornwall Hospital.—Ec for Massage and Electro-therapeutic Dept.

Royal Free Hospital, Gray's Inn-road, W.C.—Res Cas. rate of £150.

Royal London Ophthalmic Hospital, City-road, E.C. Assts. £100.

Royal Waterloo Hospital for Children and Women *S.E.*—Asst. Dental Surgeon. 25 gns. Also H

St. Mary's Hospital for Women and Children, Plaistow, E. and Asst. Res. M.O.'s. At rate of £175 and £1

St. Thomas's Hospital, S.E.—Med. Reg.

Samaritan Free Hospital for Women, Marylebone road, H.S. At rate of £100.

Sheffield University.—Chair of Physiology. £1000-£1250.

South Eastern Hospital for Children, Sydenham, S.E.—Jun. M.O. At rate of £120.

Southend-on-Sea General Hospital.—Cas. O., H.P. and H.S.'s. All at rate of £100.

South London Hospital for Women, Clapham Common, Asst. Surgeon.

Stockport Infirmary.—H.P. £150.

Torquay, Torbay Hospital.—H.S. £175.

University College Hospital, Gower-street, W.C.—Hon thetist.

Walsall General Hospital.—H.P. and Res. Asst At rate of £150.

West Hartlepool, Hawbeck Infirmary.—Visiting Diseases of the Eye, Ear, Nose and Throat.

West London Hospital, Hammersmith, W.—Non res Officer. At rate of £150.

Westminster Hospital, Broad-sanctuary, S.W.—Asst. Surg and Radium Officer. At rate of £125.

Westminster Hospital Annexe, 66, Fitzjohn's-avenue, Res. M.O. £200.

Willesden General Hospital, Harlesden-road, N.W. Surg. O. £50.

Wolverhampton Royal Hospital.—H.S. for Orthopædic H.S. for Ear, Throat and Nose Dept. Each at rate of

The Chief Inspector of Factories announces Certifying Factory Surgeons at Rhyl, Flint, and Falmouth, Cornwall.

A vacancy is announced for an Ophthalmic Specialist Referee under the Workmen's Compensation Act, Bolton, Bury, Rochdale, Oldham, Salford, and the County Court Districts. Applications should reach Private Secretary, Home Office, London, S.W., not than April 5th.

Births, Marriages, and Death

BIRTHS

McKINSTRY.—On March 13th, the wife of Dr. W. K. McK of Gwendwr-road, W., of a daughter.

PINHEY.—On March 16th, the wife of Eustace Tornhy M.B., Ch.M., Medical Officer, City of London Bow-road, London, of a son.

REID.—On March 16th, at Burntwood, Lichfield, Staffs wife of Dr. William Reid, of a daughter.

RUSSELL.—On March 16th, the wife of Dr. Brian Russe Broad-walk, Buxton, of a son.

SCHLESINGER.—On March 20th, the wife of Bernard Sch M.D., of Hollycroft-avenue, London, of a daughter.

MARRIAGES

JENKYN-THOMAS—MELLOR.—On March 15th, at St. Church, Golders Green, John Edwin Jenkyn-T B.A. Cantab., M.R.C.S., L.R.C.P., to Frances, only of Mr. and Mrs. Richard Mellor, Cranbour Golders Green, N.W.